

# AMERICAN SOCIETY OF CIVIL ENGINEERS

INSTITUTED 1852

## PROCEEDINGS

This Society is not responsible for any statement made or opinion expressed in its publications.

### SOCIETY AFFAIRS

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### MINUTES OF MEETINGS OF THE SOCIETY

**September 17th, 1913.**—The meeting was called to order at 8.30 p. m.; Vice-President J. Waldo Smith in the chair; Charles Warren Hunt, Secretary; and present, also, 179 members and 29 guests.

A paper by J. C. Ulrich, M. Am. Soc. C. E., entitled "The Prewitt Reservoir Proposition", was presented by title only.

Nelson P. Lewis, M. Am. Soc. C. E., presented the report\* of the representatives of the Society appointed by the Board of Direction to attend the Third International Road Congress, held at London, England, June 23d-28th, 1913, and Messrs. George W. Tillson, W. W. Crosby, D. B. Goodsell, A. H. Blanchard, and E. H. Thomes presented their personal views of and experiences at the Congress.

Adjourned.

\* See page 645.

**October 1st, 1913.**—The meeting was called to order at 8.30 p. m.; President George F. Swain in the chair; Chas. Warren Hunt, Secretary; and present, also 157 members and 23 guests.

The minutes of the meeting of September 3d, 1913, were approved as printed in *Proceedings* for September, 1913.

A paper by William J. Wilgus, M. Am. Soc. C. E., entitled "Physical Valuation of Railroads" was presented by the author. The paper was discussed by Messrs. F. Lavis, W. W. Crehore, T. Kennard Thomson, J. Shirley Eaton, Charles S. Churchill, and the author.

The Secretary announced that written discussions on the paper by Messrs. Maurice G. Parsons, J. Frank Aldrich, J. Shirley Eaton, C. P. Howard, M. H. Brinkley, Albin G. Nicolaysen, and F. A. Molitor, had been published in the August and September numbers of *Proceedings*, and that Messrs. S. Whinery, J. E. Willoughby, Halbert P. Gillette, J. H. Gandolfo, and Alexander C. Humphreys, had also forwarded communications on the subject. Owing to lack of time Mr. Humphreys' discussion was the only one read.

The Secretary announced the election of the following candidates on October 1st, 1913:

AS MEMBERS

JAMES EKin, ALLISON, St. Louis, Mo.

BERT HENRY BURRELL, Washington, D. C.

EDWIN MORRIS CAPPS, San Diego, Cal.

WILLIAM PITCHER CREAGER, New York City

ALPHONSUS LIGOURI DRUM, Chicago, Ill.

HUBBARD LAWRENCE FALES, Worcester, Mass.

ALMON MOYLAN FEILD, Bocas del Toro, Panama

ROBINSON WILBER HAWLEY, Berkeley, Cal.

JOHN ALBERT HOLMES, Mountain Mills, Vt.

FRANK ELMER LAMPHERE, Chicago, Ill.

CHARLES ARTHUR LINDBERY, Bellingham, Wash.

JAMES WILLIAM NELSON, Brooklyn, N. Y.

FLOYD ODELL PEASE, La Paz, Bolivia

CHARLES STOCKTON POPE, Los Angeles, Cal.

GEORGE FREDERICK PORTER, Montreal, Que., Canada

CHARLES MILLER REPPERT, Pittsburgh, Pa.

FRANKLIN DICKINSON SHAW, Philadelphia, Pa.

JOHN MUIR SILLS, Springfield, Mo.

BURTON SMITH, Turlock, Cal.

CHARLES EDWARD SMITH, St. Louis, Mo.

DAVID WENDEL SPENCE, College Station, Tex.

EDMUND JOB STEERE, Providence, R. I.

CHARLES EUGENE SUDLER, Put-in-Bay, Ohio

## AS ASSOCIATE MEMBERS

ALBERT READ BAKER, San Rafael, Cal.  
GEORGE LIVINGSTON BAKER, Friendship, N. Y.  
JOHN EDWARD BEBB, Duluth, Minn.  
JOHANNES HELENUS BERNHARD, New Orleans, La.  
HARRY REMINGTON BOUTON, New York City  
FREDERIC WATERMAN BURNHAM, New York City  
ALFRED JAMES CHARLES, Denver, Colo.  
JAMES GEORGE ESCH, Cleveland, Ohio  
FRANK PRESTON FIFER, Albany, N. Y.  
FRANCIS JAMES FITZPATRICK, Empire, Canal Zone, Panama  
HOWARD LEWIS FRANCIS, Rocha, Uruguay  
GUY OWEN FRASER, Oakland, Cal.  
FRANK ALEXANDER GIESTING, Beristain, Puebla, Mexico.  
JAMES LAWRENCE HARROP, Madison, Wis.  
EARLE MENELAS HARTRIDGE, New York City  
EDWARD JOSEPH HENRIQUES, Sioux City, Iowa  
JESSE BLAINE HOLLY, San Francisco, Cal.  
ROBERT HUGH HOUSTON, Rochester, N. Y.  
LYMAN STANLEY HOWE, Wilkes-Barre, Pa.  
EDWARD MATHew KAYSER, Loch Raven, Md.  
CLARENCE IVAN LANTZ, Morgantown, W. Va.  
MARTIN PHILIPPE LAUER, Akron, Ohio  
THOMAS JOSEPH LEAHY, Denver, Colo.  
MARK LINENTHAL, Roxbury, Mass.  
CHARLES WINSLOW LUSK, Kansas City, Mo.  
CHARLES CHRISTOPHER MARTIN, Guayama, Porto Rico  
THOMAS HATCHER MATSON, Las Cruces, N. Mex.  
CLARENCE J NOLAND, Yonkers, N. Y.  
CUTHBERT POWELL NOLAND, Jr., Baltimore, Md.  
CHARLES WILLIAM OKEY, Houma, La.  
JAMES EDWIN PARKER, Augusta, Ga.  
JOHN FERDINAND PETERSON, Cambridge, Mass.  
NORMAN GILMAN RAY, Massena, N. Y.  
CHARLES POTTER RICHARDSON, Chicago, Ill.  
THOMAS WALTON ROBY, Jr., Kingston, Ont., Canada  
SELDEN EMMETT ROCKWELL, Jordan River, B. C., Canada  
SAMUEL JOSEPH SPROL, Baltimore, Md.  
EDWY LYCURGUS TAYLOR, New Haven, Conn.  
CLARENCE LIONEL TODD, Pittsburgh, Pa.  
EVERETT FRANKLIN TOMLINSON, Dorchester, Mass.  
NICHOLAS CORNEILIUS VANDEMOER, Denver, Colo.  
CONRAD MEULY VON BLÜCHER, Corpus Christi, Tex.  
THOMAS ROBERT WALTER, Post City, Tex.

ELWIN STREETER WARNER, Greenfield, Mass.

ROBERT CLARK WHEELER, Vincennes, Ind.

CHESTER GREENHALGH WIGLEY, Trenton, N. J.

WILLIAM LANE WILLIAMS, Rome, N. Y.

#### As JUNIORS

TOM ALLEN BITHER, Berkeley, Cal.

WILLIAM BLAIR BOVYER, San Francisco, Cal.

GEORGE LOCKWOOD BRINKERHOFF, Gatun, Canal Zone, Panama

NICHOLAS COLAS, Puerto Barrios, Guatemala

EUGENE HUNTER COLEMAN, New Orleans, La.

LEWIS HENRY DELANY, Greeneville, Tenn.

CARL E. DOWNING, Belzoni, Miss.

ROBERT FRANCIS DURYEA, San Francisco, Cal.

STANLEY HARVEY EDMUNDS, Yankton, S. Dak.

JOHN FELLOWS GOWEN, Ossining, N. Y.

JOHN STANLEY GREPE, Jr., San Francisco, Cal.

JAMES BUCHANAN HAYS, Boise, Idaho

OLON HERZIG, Butte, Mont.

ERNST GUSTAV KAUFMANN, Toronto, Ont., Canada

JARED LEROY MATHIAS, San Francisco, Cal.

LAURENCE MINOT PITMAN, Arlington Heights, Mass.

CAESAR RODNEY ROBERTS, Seattle, Wash.

VALERIANO SEGURA, Cebu, Philippine Islands

WAKEMAN FRANCIS SHERWOOD, Binghamton, N. Y.

LEONARD HANSCOME SINCLAIR, Washington, D. C.

RALPH SMILLIE, New York City

WILLIAM ANDREW SMITH, South Fork, Colo.

FRANK CLYDE STEWART, Kittanning, Pa.

LAWRENCE JOHNSON WILLIAMS, Seattle, Wash.

The Secretary announced the transfer of the following candidates on October 1st, 1913:

#### FROM ASSOCIATE MEMBER TO MEMBER

WILLIAM FRANKLIN ALLISON, Portland, Ore.

OTTHMAR HERMANN AMMANN, New Brighton, N. Y.

COLLINGWOOD BRUCE BROWN, JR., Montreal, Que., Canada

JOHN STANTON ELY, Philadelphia, Pa.

JEROME HENRY FERTIG, Montrose, Colo.

JOHN BLAKE GORDON, Washington, D. C.

BENJAMIN FELAND GROAT, Pittsburgh, Pa.

SHERMAN AUGUSTUS JUBB, Los Angeles, Cal.

ARNOLD HENRY KRONE, Baltimore, Md.



ARMOUR CANTRELL POLK, Clanton, Ala.

CLARENCE WEBSTER RAYNOR, Portland, Ore.

WILLIAM ERNEST SMITH, Calgary, Alberta, Canada

FROM JUNIOR TO ASSOCIATE MEMBER

JAMES EVERETT BESWICK, Albany, N. Y.

JAMES BLAINE THOMAS COLMAN, Ann Arbor, Mich.

JOHN HENRY FEIGEL, Buffalo, N. Y.

JOHN WARREN DUBOIS GOULD, New York City

JOSEPH WATSON GROSS, Sacramento, Cal.

CHARLES MACDONALD, Tarrytown, N. Y.

CHRISTOPHER GEORGE MORRISON, Lingayen, Philippine Islands

EDWIN JAMES POTTER, Pawtucket, R. I.

RALPH JOHN REED, Los Angeles, Cal.

CLIFFORD BRADLEY SUTTLE, Philadelphia, Pa.

JONATHAN ERNEST TEAL, Baltimore, Md.

NATHAN THOMAS VEATCH, JR., Kansas City, Mo.

HOMER JENNER WILKINS, Oklahoma City, Okla.

The Secretary announced the following deaths:

ARTHUR LINCOLN ADAMS, of San Francisco, Cal., elected Member, October 2d, 1895; died September 17th, 1913.

JOHN BUTLER DUNCKLEE, of South Orange, N. J., elected Member, April 2d, 1873; died July 7th, 1913.

JOHN DOUGLAS FOUQUET, of Fishkill, N. Y., elected Member, June 3d, 1885; died September 18th, 1913.

FRANCIS VALENTINE TOLDERVY LEE, of Victoria, B. C., Canada, elected Member, February 1st, 1910; died August 17th, 1913.

JAMES ROSS, of Montreal, Que., Canada, elected Member, September 6th, 1882; died September 20th, 1913.

The Secretary announced that the next meeting of the Society, on October 15th, would be held in New Orleans, La., but that arrangements were being made for holding an informal meeting at the Society House on the same date.

Adjourned.

## OF THE BOARD OF DIRECTION

(Abstract)

**October 1st, 1913.**—President Swain in the chair; Chas. Warren Hunt, Secretary; and present, also, Messrs. Bush, Churchill, Edwards, Endicott, Gerber, Hodge, Ridgway, Smith, and Snow.

Thomas Coltrin Keefer, Member and Past-President, was elected by unanimous vote of the Board of Direction and of all living Past-Presidents an Honorary Member of the Society.

In the matter of the Licensing or Registration of Engineers by the various States, it was decided to keep the Committees on this subject appointed some time ago, alive, and authority was given to fill any vacancies which may have occurred, and the Secretary was instructed as soon as these Committees are filled to publish their names in *Proceedings*.

Upon request of the Committee of Management of the International Engineering Congress of 1915, the Treasurer of the Society was authorized to forward \$2 250 to that Committee, this sum being 25% of the total amount underwritten by this Society, for the payment of necessary preliminary expenses.

James H. Edwards was appointed a member of the Special Committee on Steel Columns and Struts, to fill the vacancy caused by the death of the late Alfred P. Boller.

The Secretary was requested to go to San Francisco after the New Orleans Meeting to consult with, and give any aid he can to, the Committee of Management in charge of the International Engineering Congress of 1915, and also to secure as much information as possible on which to base a decision as to the time and place for holding the Annual Convention of 1915, which it has already been determined shall be held in or near San Francisco.

Ballots for membership were canvassed, resulting in the election of 23 Members, 47 Associate Members, 24 Juniors, and the transfer of 13 Juniors to the grade of Associate Member.

Twelve Associate Members were transferred to the grade of Member.

Applications were considered, and other routine business transacted.

Adjourned.

## ANNOUNCEMENTS

The House of the Society is open from 9 A. M. to 10 P. M., every day, except Sundays, Fourth of July, Thanksgiving Day, and Christmas Day.

## FUTURE MEETINGS

**November 5th, 1913.—8.30 P. M.**—This will be a regular business meeting. Two papers will be presented for discussion, as follows: "Concrete Bridges: Some Important Features in Their Design," by Walter M. Smith, Sr., M. Am. Soc. C. E., and Walter M. Smith, Jr., Jun. Am. Soc. C. E.; and "The Effect of Saturation on the Strength of Concrete," by J. L. Van Ornum, M. Am. Soc. C. E.

These papers were printed in *Proceedings* for August, 1913.

**November 19th, 1913.—8.30 P. M.**—At this meeting a paper by Richard R. Lyman, Assoc. M. Am. Soc. C. E., entitled "Measurement of the Flow of Streams by Approved Forms of Weirs, with New Formulas and Diagrams," will be presented for discussion.

This paper was printed in *Proceedings* for September, 1913.

**December 3d, 1913.—8.30 P. M.**—A regular business meeting will be held, and two papers will be presented for discussion, as follows: "Coal Piers on the Atlantic Seaboard," by J. E. Greiner, M. Am. Soc. C. E., and "Topographical Surveys Made by the American Section of the International Boundary Commission, United States and Mexico," by W. W. Follett, M. Am. Soc. C. E.

These papers are printed in this number of *Proceedings*.

## SPECIAL MEETINGS FOR TOPICAL DISCUSSION

On the two days immediately following the Annual Meeting, three meetings of the Society will be held, at which the subject for discussion will be "Road Construction and Maintenance."

The meetings will be held as follows:

**First Meeting, Friday, January 23d, 1914.—10 A. M.**—The following sub-division of the subject will be discussed:

(1) "Engineering Organizations for Highway Work."

**Second Meeting, Friday, January 23d, 1914.—2 P. M.**—The following sub-division of the subject will be discussed:

(2) "Factors Limiting the Selection of Materials and of Methods in Highway Construction."

**Third Meeting, Saturday, January 24th, 1914.—10 A. M.**—The following sub-division of the subject will be discussed:

(3) "Equipment and Methods for Maintaining Bituminous Surfaces and Bituminous Pavements."

### SPECIAL COMMITTEE ON A NATIONAL WATER LAW.

At the Society meeting of May 7th, 1913, the following was presented:

*Moved:* That the Board of Direction of the American Society of Civil Engineers be and is hereby authorized and directed to appoint a special committee to investigate the advisability of drafting A National Water Law applicable to all navigable, interstate and other waters within the jurisdiction of the United States, and embracing all uses of water, and that such committee be directed to prepare a preliminary draft of such a law for submission at some regular meeting of the Society, if, in their judgment, it appears advisable."

This Resolution was referred to the Board of Direction.

The Board has appointed the following Committee:

F. H. NEWELL, *Chairman,*

GEORGE G. ANDERSON,

ROBERT E. HORTON,

CHARLES W. COMSTOCK,

JOHN H. LEWIS,

CLEMENS HERSCHEL,

CHARLES D. MARX,

W. C. HOAD,

GARDNER S. WILLIAMS.

### LIST OF NOMINEES FOR THE OFFICES TO BE FILLED AT THE ANNUAL ELECTION, JANUARY 21st, 1914

The following list of nominees for the offices to be filled at the Annual Meeting, January 21st, 1914, received from the Nominating Committee, was presented to the Board of Direction at its meeting on September 3d, 1913. The list has already been mailed to all Corporate Members:

*For President, to serve one year:*

HUNTER McDONALD, Nashville, Tenn.

*For Vice-Presidents, to serve two years:*

CHARLES F. LOWETH, Chicago, Ill.

GARDNER S. WILLIAMS, Ann Arbor, Mich.

*For Treasurer, to serve one year:*

JOHN F. WALLACE, New York City

*For Directors, to serve three years:*

ARTHUR S. TUTTLE, New York City.....District No. 1

GEORGE W. FULLER, New York City.....District No. 1

CHARLES H. KEEFER, Ottawa, Ont., Canada.....District No. 2

MORTIMER E. COOLEY, Ann Arbor, Mich.....District No. 3

EUGENE E. HASKELL, Ithaca, N. Y.....District No. 3

RICHARD MONTFORT, Louisville, Ky.....District No. 5

**REPORT OF REPRESENTATIVES OF THE AMERICAN SOCIETY OF  
CIVIL ENGINEERS AT THE THIRD INTERNATIONAL  
ROAD CONGRESS**

NEW YORK CITY, SEPTEMBER 6, 1913.

TO THE BOARD OF DIRECTION OF THE  
AMERICAN SOCIETY OF CIVIL ENGINEERS.

GENTLEMEN:—We, the undersigned, having been honored by your designation as representatives of the American Society of Civil Engineers at the Third International Road Congress, which was held in London from June 23d to 28th of the present year, beg to submit the following report:

The attendance at the Congress was over 2000, but the official figures showing the total registration are not yet available. The programme of the Congress and the subjects of the nine (9) questions and ten (10) communications submitted for consideration have been so frequently published in the engineering press that it is needless for us to enumerate them. Although they covered such subjects as the lighting of highways and vehicles, the regulation of traffic, the authorities in charge of highways, direction and distance sign posts, and the development of self-propelled vehicles, it was essentially an engineering congress. There were twenty-five (25) American authors of papers, and it is gratifying to note that, notwithstanding the fact that some of the subjects would naturally be treated by other than civil engineers, no less than seventeen (17) of the twenty-five (25) authors are members of the Society, while still other members took part in the discussions. Many of the papers presented were valuable contributions to engineering literature. The conclusions which were embodied in the resolutions adopted at the final session of the Congress contain certain fundamental principles which will doubtless be accepted by highway engineers, but a number of the resolutions submitted to the Congress by the general reporters failed of adoption or were substantially modified owing to the reluctance of many of the delegates to accept conclusions which were in any way at variance with the traditional practice with which they were familiar, and owing also to an instinctive courtesy which restrained delegates of one country from insisting upon the adoption of resolutions which did not appear to be acceptable to their colleagues from other countries. We have not embodied these resolutions in our report,\* but a copy of them is attached and submitted herewith.

In connection with the Congress there was an extensive and very instructive exhibition of road machinery and materials, while the

\* These resolutions are not reproduced here, but are filed in the Library of the Society where they are available for all who wish to examine them. They may also be found in *The Surveyor and Municipal and County Engineer*, July 4th, 1913.



National Physical Laboratory, including the Road Board Laboratory for the testing of road materials, was inspected by many of the delegates.

The Institution of Civil Engineers is in temporary quarters during the construction of its new building, and was, therefore, unable to place any of its rooms at the disposal of the Congress for the sectional meetings. The Institution of Mechanical Engineers and the Surveyors' Institution hospitably opened their buildings for this purpose, and one of the most delightful social functions in connection with the Congress was the reception by the Institution of Civil Engineers at Albert Hall on the evening of June 25th. The Organizing Committee arranged a number of excursions for the inspection of highways and paving plants in various parts of Great Britain, and the delegates were everywhere most hospitably entertained by the British engineers and highway officials.

The visiting members of the Society were cordially urged to attend the ceremonies incident to the unveiling of the memorial window to Lord Kelvin, at Westminster Abbey, on July 15th, but as we had to leave London before that date, we were unable to be present at the consummation of a movement in which the Society took an active part and toward the expense of which our members made substantial contribution.

The next Congress is to be held at Munich in 1916. We believe that an invitation to hold the Congress of 1919 in this country would receive favorable consideration were it not for the fact that the United States is the only important country which has not given official recognition to this movement by becoming a member of the Permanent Association of International Road Congresses, and as the Federal Congress has expressly forbidden the President to extend or accept invitations to participate in any international convention without the express authority of the Congress, it is obvious that such an invitation cannot be given.

We venture to express the hope that this prohibition will soon be repealed, that the United States Government will join with the other nations of the world in this movement, and that the highway engineers of the United States, and especially the members of this Society, may be given an opportunity to return the graceful courtesies which they have already received at the hands of the engineers and other highway officials of France, Belgium, and Great Britain, in connection with the three Road Congresses already held and which will undoubtedly be extended to them by the German officials and engineers in 1916.

Respectfully submitted,

NELSON P. LEWIS,  
GEO. W. TILLSON,  
W. W. CROSBY,  
DANIEL B. GOODSSELL,  
ARTHUR H. BLANCHARD.



### SEARCHES IN THE LIBRARY

In January, 1902, the Secretary was authorized to make searches in the Library, upon request, and to charge therefor the actual cost to the Society for the extra work required. Since that time many searches have been made, and bibliographies and other information on special subjects furnished.

The resulting satisfaction, to the members who have made use of the resources of the Society in this manner, has been expressed frequently, and leaves little doubt that, if it were generally known to the membership that such work would be undertaken, many would avail themselves of it.

The cost is trifling compared with the value of the time of an engineer who looks up such matters himself, and the work can be performed quite as well, and much more quickly, by persons familiar with the Library.

In asking that such work be undertaken, members should specify clearly the subject to be covered, and whether references to general books only are desired, or whether a complete bibliography, involving search through periodical literature, is desired.

In reference to this work, the Appendices\* to the Annual Reports of the Board of Direction for the years ending December 31st, 1906, and December 31st, 1910, contain summaries of all searches made to date.

### PAPERS AND DISCUSSIONS

Members and others who take part in the oral discussions of the papers presented are urged to revise their remarks promptly. Written communications from those who cannot attend the meetings should be sent in at the earliest possible date after the issue of a paper in *Proceedings*.

All papers accepted by the Publication Committee are classified by the Committee with respect to their availability for discussion at meetings.

Papers which, from their general nature, appear to be of a character suitable for oral discussion, will be published as heretofore in *Proceedings*, and set down for presentation to a future meeting of the Society, and on these, oral discussions, as well as written communications, will be solicited.

All papers which do not come under this heading, that is to say, those which from their mathematical or technical nature, in the opinion of the Committee are not adapted to oral discussion, will not be scheduled for presentation to any meeting. Such papers will be published in *Proceedings* in the same manner as those which are to

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\* *Proceedings*, Vol. XXXIII, p. 20 (January, 1907); Vol. XXXVII, p. 28 (January, 1911).

be presented at meetings, but written discussions, only, will be requested for subsequent publication in *Proceedings* and with the paper in the volumes of *Transactions*.

The Board of Direction has adopted rules for the preparation and presentation of papers, which will be found on page 429 of the August, 1913, *Proceedings*.

### LOCAL ASSOCIATIONS OF MEMBERS OF THE AMERICAN SOCIETY OF CIVIL ENGINEERS

#### San Francisco Association

The San Francisco Association of Members of the American Society of Civil Engineers holds regular bi-monthly meetings, with banquet, and weekly informal luncheons. The former are held at 6 P. M., at the Palace Hotel, on the third Friday of February, April, June, August, October, and December, the last being the Annual Meeting of the Association.

Informal luncheons are held at 12.15 P. M. every Wednesday, and the place of meeting may be ascertained by communicating with the Secretary of the Association, E. T. Thurston, Jr., M. Am. Soc. C. E., 713 Mechanics' Institute, 57 Post Street.

The by-laws of the Association provide for the extension of hospitality to any member of the Society who may be temporarily in San Francisco, and any such member will be gladly welcomed as a guest.

#### Colorado Association

The meetings of the Colorado Association of Members of the American Society of Civil Engineers are held on the second Saturday of each month, except July and August. The hour and place of meeting are not fixed, but this information will be furnished on application to the Secretary, Roger W. Toll, Jun. Am. Soc. C. E., 700 Tramway Building, Denver, Colo. The meetings are usually preceded by an informal dinner. Members of the American Society of Civil Engineers will be welcomed at these meetings.

Weekly luncheons are held on Wednesdays, and, until further notice, will take place at the Colorado Traffic Club.

Visiting members are urged to attend the meetings and luncheons.

#### (Abstract of Minutes of Meeting)

**September 13th, 1913.**—The meeting was called to order; President Ridgway in the chair; Roger W. Toll, Secretary; and present, also, 10 members and 2 guests.

The minutes of the meeting of June 14th, 1913, the Annual Meeting, were read and approved.

The resignation of G. N. Houston, M. Am. Soc. C. E., as President of the Association, was read, and the announcement was made that, in accordance with the Constitution, Vice-President Ridgway had succeeded to the office of President and that the Executive Committee had chosen E. F. Vincent, M. Am. Soc. C. E., to fill the office of Vice-

President. On motion the action of the Executive Committee in this matter was adopted.

The report of the Auditing Committee was read and adopted.

In accordance with a resolution, the President appointed Messrs. H. S. Crocker, Chairman, John E. Field, and Robert Follansbee, a Committee to take action in regard to a contribution to the International Engineering Congress.

A paper by M. C. Hinderlider, M. Am. Soc. C. E., entitled "The Santa Cruz Valley Irrigation Project at Tucson, Arizona," was presented by the author who illustrated his remarks with stereopticon views.

Adjourned.

#### Atlanta Association

(Abstract of Minutes of Meeting)

**September 12th, 1913.**—At a meeting held at the Carnegie Library, President Arthur Pew in the chair; James Nisbet Hazlehurst, Chairman of the Executive Committee, acting as Secretary; the following business was transacted:

The Report of the Executive Committee relative to a movement toward affiliating with the Local Chapters of other Scientific Societies represented in the City of Atlanta, was presented and discussed. On motion, the action of the Executive Committee in this matter was approved, and the acceptance, on the part of the Association, of membership in the proposed general organization of local chapters, was carried, provided the project received the approval of the Board of Direction of the American Society of Civil Engineers.

B. M. Hall, M. Am. Soc. C. E., was appointed a member of the Executive Committee to serve out the unexpired term of Alexander Bonnyman, M. Am. Soc. C. E., whose resignation was accepted on account of change of residence.

At the request of the Carnegie Library Commission, President Pew appointed Messrs. Hall, Dallis, and Thayer to act as an Advisory Committee in the selection of such technical literature as the Commission shall hereafter purchase for the Library.

On motion, Mr. Hazlehurst was selected to represent the Association in the future affairs of the Affiliated Technical Societies of the City of Atlanta, and to serve on its Executive Committee until his successor is appointed.

Adjourned.

#### Philadelphia Association

At its meeting of June 4th, 1913, the Board of Direction of the Society considered and approved the proposed Constitution of the Philadelphia Association of Members of the American Society of Civil Engineers.

#### Portland, Ore., Association

On June 18th, 1913, the Portland, Ore., Association of Members of the American Society of Civil Engineers was organized with the following officers: E. G. Hopson, President; W. S. Turner, First Vice-

President; D. D. Clarke, Second Vice-President; G. B. Hegardt, Treasurer; and Charles J. McGonigle, Secretary.

#### **Seattle Association**

On June 30th, 1913, the Seattle Association of Members of the American Society of Civil Engineers was organized with the following officers: Samuel H. Hedges, President; Ernest B. Hussey, Vice-President; and Joseph Jacobs, Secretary-Treasurer.

### **PRIVILEGES OF ENGINEERING SOCIETIES EXTENDED TO MEMBERS OF THE AMERICAN SOCIETY OF CIVIL ENGINEERS**

Members of the American Society of Civil Engineers will be welcomed by the following Engineering Societies, both to the use of their Reading Rooms, and at all meetings:

**American Institute of Mining Engineers**, 29 West Thirty-ninth Street, New York City.

**American Society of Mechanical Engineers**, 29 West Thirty-ninth Street, New York City.

**Architekten-Verein zu Berlin**, Wilhelmstrasse 92, Berlin W. 66, Germany.

**Associação dos Engenheiros Cívis Portuguezes**, Lisbon, Portugal.

**Australasian Institute of Mining Engineers**, Melbourne, Victoria, Australia.

**Boston Society of Civil Engineers**, 715 Tremont Temple, Boston, Mass.

**Brooklyn Engineers' Club**, 117 Remsen Street, Brooklyn, N. Y.

**Canadian Society of Civil Engineers**, 413 Dorchester Street, West, Montreal, Que., Canada.

**Civil Engineers' Society of St. Paul**, St. Paul, Minn.

**Cleveland Engineering Society**, Chamber of Commerce Building, Cleveland, Ohio.

**Cleveland Institute of Engineers**, Middlesbrough, England.

**Dansk Ingeniorforening**, Amaliegade 38, Copenhagen, Denmark.

**Engineers' and Architects' Club of Louisville, Ky.**, 303 Norton Building, Fourth and Jefferson Streets, Louisville, Ky.

**Engineers' Club of Baltimore**, Baltimore, Md.

**Engineers' Club of Minneapolis**, 17 South Sixth Street, Minneapolis, Minn.

**Engineers' Club of Philadelphia**, 1317 Spruce Street, Philadelphia, Pa.

**Engineers' Club of St. Louis**, 3817 Olive Street, St. Louis, Mo.

**Engineers' Club of Toronto**, 96 King Street, West, Toronto, Ont., Canada.

- Engineers' Society of Northeastern Pennsylvania**, 302 Board of Trade Building, Scranton, Pa.
- Engineers' Society of Pennsylvania**, 219 Market Street, Harrisburg, Pa.
- Engineers' Society of Western Pennsylvania**, 2511 Oliver Building, Pittsburgh, Pa.
- Institute of Marine Engineers**, 58 Romford Road, Stratford, London, E., England.
- Institution of Engineers of the River Plate**, Buenos Aires, Argentine Republic.
- Institution of Naval Architects**, 5 Adelphi Terrace, London, W. C., England.
- Junior Institution of Engineers**, 39 Victoria Street, Westminster, S. W., London, England.
- Koninklijk Instituut van Ingenieurs**, The Hague, The Netherlands.
- Louisiana Engineering Society**, 321 Hibernia Bank Building, New Orleans, La.
- Memphis Engineering Society**, Memphis, Tenn.
- Midland Institute of Mining, Civil and Mechanical Engineers**, Sheffield, England.
- Montana Society of Engineers**, Butte, Mont.
- North of England Institute of Mining and Mechanical Engineers**, Newcastle-upon-Tyne, England.
- Oesterreichischer Ingenieur- und Architekten-Verein**, Eschenbachgasse 9, Vienna, Austria.
- Pacific Northwest Society of Engineers**, 803 Central Building, Seattle, Wash.
- Rochester Engineering Society**, Rochester, N. Y.
- Sachsischer Ingenieur- und Architekten-Verein**, Dresden, Germany.
- Sociedad Colombiana de Ingenieros**, Bogota, Colombia.
- Sociedad de Ingenieros del Peru**, Lima, Peru.
- Societe des Ingenieurs Civils de France**, 19 Rue Blanche, Paris, France.
- Society of Engineers**, 17 Victoria Street, Westminster, S. W., London, England.
- Svenska Teknologforeningen**, Brunkebergstorg 18, Stockholm, Sweden.
- Tekniske Forening**, Vestre Boulevard 18-1, Copenhagen, Denmark.
- Western Society of Engineers**, 1737 Monadnock Block, Chicago, Ill.



## ACCESSIONS TO THE LIBRARY

(From September 3d to October 1st, 1913)

## DONATIONS\*

## CONSERVATION OF WATER.

By Walter McCulloh, M. Am. Soc. C. E. Cloth, 10x7 in., illus., 10 + 99 pp. New Haven, Yale University Press; London, Humphrey Milford, Oxford University Press, 1913. \$2.00.

In a secondary title, it is stated that this book consists of addresses on the subject of water conservation delivered in the Chester S. Lyman Lecture Series, 1912, before the Senior Class of the Sheffield Scientific School of Yale University, this volume constituting the first of that series of lectures. The principal problems discussed by the author in these lectures are stated to be the regulation of rivers, the control and prevention of floods, and the proper authorities for effecting such control and regulation. In the course of the discussion, he presents the questions involved in the solution of these problems, the proposed methods of procedure suggested by the study of the subject, the benefits to be derived by individuals, municipalities, etc., from the proper regulation of streams, and, in his last lecture, he uses what has been done with the water resources of New York State as an example of what can or might be done to accomplish water conservation. The Contents are: Introductory; Basic Data Essential to a Comprehensive Study of Water Storage; Water Power; Water Storage for Water Supplies, Sanitation, and Irrigation; Water Resources of New York State.

## TEXT-BOOK ON HIGHWAY ENGINEERING.

By Arthur H. Blanchard, M. Am. Soc. C. E., and Henry B. Drowne, Assoc. M. Am. Soc. C. E. Cloth, 9½ x 6½ in., illus., 13 + 762 pp. New York, John Wiley & Sons, Inc.; London, Chapman & Hall, Limited, 1913. \$4.50. (Donated by the Authors and Publishers.)

The subject-matter of this book, it is stated, is based largely on lectures prepared by the authors for their various classes and on their practice, as highway engineers, in the United States, Canada, and Europe. All phases of modern highway engineering are said to have been treated, and there are chapters on such subjects as Preliminary Investigations, Surveying and Mapping, Economics, Administration, and Legislation, which are thought to be somewhat of an innovation in books on this subject. Bituminous materials and their use in the construction and maintenance of roads and pavements are discussed in detail, and numerous references are made in the text to the writings of eminent engineers and chemists on the subject. Standard specifications and reports of various National Societies have also been quoted, in order, the preface states, that practice throughout the United States rather than that of an individual or a given locality, may be represented. The book has been written, it is stated, primarily from the standpoint of the instructor and student, with a logical order and arrangement of the subject-matter and sufficient detail to acquaint the student with the principles and practice of modern highway engineering; its scope, however, is stated to be sufficiently broad, in reference to materials, construction, maintenance, specifications, and cost data to serve as a comprehensive reference book on highway engineering for the practicing engineer. The Contents are: Historical Review; Preliminary Investigations; Surveying and Mapping; Design; Drainage; Foundations; Earth and Sand-Clay Roads; Gravel Roads; Broken Stone Roads; Bituminous Materials; Dust Prevention by the Use of Palliatives; Bituminous Surfaces; Bituminous Gravel and Bituminous Macadam Pavements; Bituminous Concrete Pavements; Sheet Asphalt and Rock Asphalt Pavements; Wood Block Pavements; Stone Block Pavements; Brick Pavements; Concrete Pavements; Miscellaneous Roads and Pavements; Street Cleaning and Snow Removal; Car Tracks; Pipe Systems; Comparison of Roads and Pavements; Sidewalks, Curbs, and Gutters; Bridges, Culverts, and Guard Rails; Economics, Administration, and Legislation; Index.

## AN ELEMENTARY TREATISE ON CALCULUS:

A Text Book for Colleges and Technical Schools. By William S. Franklin, Barry MacNutt, and Rollin L. Charles. Cloth, 8½ x 6 in., illus., 9 + 253 + 41 pp. South Bethlehem, Pa., Published by the Authors, 1913. \$2.00.

In order to lead to a clear understanding of the principles of calculus, the authors' chief endeavor, it is stated, has been to develop the subject as simply and

\* Unless otherwise specified, books in this list have been donated by the publishers.



directly as possible, to which end they have given a number of formal problems in differentiation and integration. The authors believe that it is a mistake in a textbook on calculus to break the thread of the textual discussion by inserting algebraic problems, and therefore have included their formal problems in Appendices A and B, and, in Appendix C, they have given a selected list of treatises on mathematics and mathematical physics, references to many of which are made in the text. The fact that the infinitesimal method tends greatly to directness and simplicity in the discussion of physical problems, has led the authors, it is stated, to use the idea of infinitesimals throughout their text. The Chapter headings are: A General Survey of Differential and Integral Calculus; Formulas for Differentiation and Integration; Integration; Partial Differentiation and Integration; Miscellaneous Applications of Calculus; Expansions in Series; Some Ordinary Differential Equations; The Partial Differential Equation of Wave Motion; Vector Analysis; Appendix A, Problems; Appendix B, Table of Integrals; Appendix C, Some Important Books on Mathematical Theory; Index.

#### LABORATORY MANUAL OF TESTING MATERIALS.

By William Kendrick Hatt, M. Am. Soc. C. E., and H. H. Scofield. Cloth,  $7\frac{1}{2} \times 5\frac{1}{2}$ , illus., 9 + 135 pp. New York and London, McGraw-Hill Book Company, Inc., 1913. \$1.25.

This manual, it is stated, is the outcome of eighteen years' experience in the Laboratory for Testing Materials at Purdue University. As now issued it has been considerably enlarged, the list of experiments has been increased, and a more complete treatment of machines and apparatus has been added. The subject-matter relates to definitions, methods, apparatus, experiments, etc., which may be used in any testing laboratory, and it is hoped, the preface states, that practitioners, as well as students, will find the volume useful in relation to their work in engineering design and inspection of materials. One of the purposes of the manual, as stated, is to relieve the instructor of the necessity of explaining the details of mechanical procedure. The Chapter headings are: General; General Instructions; Definitions; Materials Stressed Beyond the Elastic Limit; Testing and Testing Machines; List of Experiments; Instructions for Performing Experiments; Appendix I, Common Formulas; Appendix II, Strength Specifications for Steel and Iron; Appendix III, Standard Forms of Test Pieces; Strength Tables; Index.

#### THE CONTROL OF WATER

As Applied to Irrigation, Power and Town Water Supply Purposes. By Philip A. Morley Parker, Assoc. M. Am. Soc. C. E. Cloth,  $9 \times 6$  in., illus., 1055 pp. London, George Routledge & Sons, Limited, 1913. (Donated by the Author.)

The subject-matter contained in this book, it is stated, is the result of actual engineering experience, being based for the most part on notes and formulas gathered by the author during eighteen years or more of professional practice, and he, therefore, hopes that it will be used as a manual by engineers in actual work. As stated in the title the work relates to a study of hydraulics, as applied to irrigation and water supply, and includes detailed discussion of both the theoretical and practical sides of the subject. Numerous formulas, tables, and illustrations are included, and, wherever possible, references to original authorities are given. The Contents are: Preliminary Data; General Theory of Hydraulics; Gauging of Streams and Rivers; Gauging by Weirs; Discharge of Orifices; Collection of Water and Flood Discharge; Dams and Reservoirs; Pipes; Open Channels; Filtration and Purification of Water; Problems Connected with Town Water Supply; Irrigation; Movable Dams; Hydraulic Machinery Other Than Turbines; Turbines and Centrifugal Pumps; Concrete, Ironwork, and Allied Hydraulic Construction; Tables; Graphic Diagrams; Index.

#### SAFETY FIRST.

By George Bradshaw. Paper,  $7\frac{1}{2} \times 5$  in., illus., 130 pp. New York and London, McGraw-Hill Book Company, Inc., 1913. 50 cents.

In the Introduction, it is stated that the officials and employes of railroads and industrial corporations are engaged in a campaign for greater safety in operation and for the prevention of injuries. The author's aim in this work has been to contribute to the advancement of this campaign by calling the attention of the employes of these corporations to views of safe and unsafe practices and conditions which occur in the course of their routine duties, with proper comments thereon, in the hope that they will study them carefully and learn to apply them in their work.

## A TREATISE ON ROADS AND PAVEMENTS.

By Ira Osborn Baker, M. Am. Soc. C. E. Second Edition. Enlarged. Cloth,  $9\frac{1}{2} \times 6$  in., illus., 11 + 698 pp. New York, John Wiley & Sons, Inc., London, Chapman & Hall, Limited, 1913. \$5.00.

The purpose of this new edition, it is stated, is to add to the book, a chapter on Automobile Roads and Concrete Pavements, which has been made necessary by the number and power of modern automobiles, and the consequent development of new forms of road surfaces designed to resist motor traffic. The continued development of the Portland cement industry has led to the introduction of a new type of concrete road surface which is also discussed in this chapter. In the preface to the first edition, issued in 1903, it is stated that the author's object is a discussion, from the engineer's viewpoint, of the principles involved in the construction of country roads and city pavements, as the science of road-making and maintenance is based on well-established elementary principles, on the correct reasoning of which, rather than on rules and methods of construction, such art depends. The first four chapters of the book relate to the economics and location of country roads and to the construction and location of earth roads. The other chapters relate to the construction and maintenance of hard roads and pavements, and are based on American principles of road-making as being best suited to American conditions. The Contents are: Part I, Country Roads: Road Economics; Road Location; Earth Roads; Gravel Roads; Broken-Stone Roads; Miscellaneous Roads; Equestrian Roads and Horse-Race Tracks. Part II, Street Pavements: Pavement Economics; Street Design; Street Drainage; Curbs and Gutters; Pavement Foundations; Asphalt Pavements; Brick Pavements; Cobble-Stone Pavement; Stone-Block Pavement; Wood-Block Pavements; Comparison of Pavements; Sidewalks; Bicycle Paths and Race Tracks; Automobile Roads and Concrete Pavements; Index.

## HYDRAULIC TURBINES

With a Chapter on Centrifugal Pumps. By R. L. Daugherty. Cloth,  $9\frac{1}{2} \times 6\frac{1}{2}$  in., illus., 9 + 156 pp. New York and London, McGraw-Hill Book Company, Inc., 1913. \$2.00.

The preface states that the design of hydraulic turbines is a highly specialized industry, few engineers being called on at present to design such machines. With the increasing use of water power, however, many engineers and designers, it is stated, will find it necessary to familiarize themselves with the construction details of turbines, their characteristics, and the type and size of machine for any given set of conditions, and the author hopes that to such men, a clear understanding of the theory, as here presented, will be of interest. The purpose of the book, it is stated, is to give the student and the engineer a general idea of water-power development and the conditions affecting turbine operation; a knowledge of the principal features of modern turbine construction; an outline of the theory and characteristics of the principal types, commercial constants, selection of type and size of turbine, costs, water power, and the cost of the latter as compared with steam power. Water-power development is treated only as it relates to the choice of turbines, such related subjects as stream gauging and rating, rainfall, run-off, etc., being treated briefly. The Chapter headings are: Introduction; Types of Turbines and Settings; Water Power; The Tangential Water Wheel; The Reaction Turbine; General Theory; Theory of the Tangential Water Wheel; Theory of the Reaction Turbine; Turbine Testing; General Laws and Constants; Selection of a Turbine; Selection of Type of Turbine; Cost of Turbines and Water Power; Centrifugal Pumps; Index.

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**Air-Conditioning.** Being a Short Treatise on the Humidification, Ventilation, Cooling, and the Hygiene of Textile Factories, Especially with Relation to Those in the U. S. A. By G. B. Wilson. John Wiley & Sons, New York; Chapman & Hall, Ltd., London, 1908.

**The Theory of Sound.** By John William Strutt. *Baron Rayleigh*. 2 Vol. Second Edition, Revised and Enlarged. Macmillan and Co., London and New York, 1894.

**The Scientific American Cyclopedia of Formulas,** Partly Based Upon the Twenty-eighth Edition of Scientific American Cyclopedia of Receipts, Notes and Queries. Edited by Albert A. Hopkins. Munn & Co., Inc., New York, 1913.

**Scientific American Reference Book, Edition of 1913.** Compiled and Edited by Albert A. Hopkins and A. Russell Bond. Munn & Co., Inc., New York, 1913.

**Coast Erosion and Protection.** By Ernest R. Matthews. J. B. Lippincott Co., Philadelphia; Charles Griffin & Co., Ltd., London, 1913.

**The Calorific Power of Fuels,** With a Collection of Auxiliary Tables and Tables Showing the Heat of Combustion of Fuels, Solid, Liquid, and Gaseous; to Which is Appended the Report of the Committee on Boiler Tests of the American Society of Mechanical Engineers (December, 1899). By Herman Poole. Second Edition, Revised and Enlarged. John Wiley & Sons, New York; Chapman & Hall, Ltd., London, 1910.

**Investigations and Experimental Researches for the Construction of My Large-Oil-Engine:** Paper read before the Schiffbautechnische Gesellschaft at Berlin, November 24th, 1911. By H. Junkers. Verlag für Fachliteratur G. m. b. H., London, Berlin, Wien.

**Reinforced Concrete Bridges.** By Frederick Rings. D. Van Nostrand Co., New York, 1913.

**Public Utilities, Their Cost New and Depreciation.** By Hammond V. Hayes. D. Van Nostrand Co., New York, 1913.

**Natural Rock Asphalts and Bitumens:** Their Geology, History, Properties and Industrial Application. By Arthur Danby. D. Van Nostrand Co., New York, 1913.

**Factory Lighting.** By Clarence E. Clewell. McGraw-Hill Book Co., New York and London, 1913.

**Engineering Thermodynamics.** By Charles Edward Lucke. McGraw-Hill Book Co., New York and London, 1912.

**General Metallurgy.** By H. O. Hofman. McGraw-Hill Book Co., New York and London, 1913.

**Die Kanalisation der Freien und Hansestadt Hamburg.** Bearbeitet im Auftrage der Baudeputation von Curt Märekell. Boysen & Maasch, Hamburg, 1910.

**Diamantbohrungen für Schürf- und Aufschlussarbeiten über und unter Tage.** Von Georg Glockemeier. Julius Springer, Berlin, 1913.

**American Society for Testing Materials: Index to Proceedings. Vol. 1-12 (1898-1912.)** Edited by the Secretary. Published by the Society, Philadelphia, 1913.

**Elements of Water Bacteriology with Special Reference to Sanitary Water Analysis.** By Samuel Cate Prescott and Charles Edward Amory Winslow. Third Edition, Rewritten. John Wiley & Sons, Inc., New York: Chapman & Hall, Limited, London, 1913.

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vice, 223 Irwin Pl., Cincinnati, Ohio.....		Sept. 3, 1913
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forced Concrete, Mass. Inst. Tech., 201	M.	Sept. 3, 1913
Devonshire St., Boston, Mass.....		
ROYALL, EDWARD MANLY, JR. Supt. of Constr. and Oper-		
ation, Oakdene Compress & Warehouse Co., Charles-		Sept. 3, 1913
ton, S. C.....		
SELL, WILLIAM DRUMM. Box 222, Charleston-	Jun.	Dec. 3, 1891
Kanawha, W. Va.....	Assoc.	May 2, 1899
	M.	Sept. 3, 1913
SULLIVAN, VERNON LYLE. Local Engr. and	Assoc. M.	June 6, 1911
Mgr., Imperial Irrig. Co., Buenavista,	M.	Sept. 3, 1913
Tex.....		
TWINING, WILLIAM STANTON. Cons. Engr., Ford, Bacon &		
Davis, 115 Broadway, New York City.....		Sept. 3, 1913
WATERBURY, LESLIE ABRAM. Prof. of Civ.	Assoc.	Nov. 7, 1906
Eng., Univ. of Arizona, Tucson, Ariz..	Assoc. M.	June 30, 1910
	M.	Sept. 3, 1913
WHITE, GILBERT CASE. Cons. Civ. and Hydr.	Assoc. M.	April 5, 1905
Engr., Charlotte, N. C.....	M.	Sept. 3, 1913
WORLEY, JOHN STEPHEN. Member, Board of	Assoc. M.	June 5, 1907
Valuation Engrs., U. S. Interstate Com-	M.	Sept. 3, 1913
merce Comm., Washington, D. C.....		

ASSOCIATE MEMBERS		Date of Membership.
ALVEY, JAMES PERRIE, JR. Engr., The Arnold Co., 105 La Salle St., Chicago, Ill.		Sept. 3, 1913
CATE, CHARLES EDWARD. Caré, Ferrocarril Sud-Pacífico de Mexico, Ferrocarril de Sonora, Empalme, Sonora, Mexico.		July 2, 1913
CHEVALIER, LOUIS. Engr., Stillman-Delehanty-Ferris Co., 26 Exchange Pl. (Res., 22 Boyd Ave.), Jersey City, N. J.	} Jun. Assoc. M.	May 1, 1906
CULLINGS, EDWIN SANFORD. Asst. Civ. Engr., Conservation Comm., State of New York, Albany, N. Y.		May 7, 1913
DANDOIS, CHARLES STEPHEN. Salladasburg, Pa.		Sept. 3, 1913
DUGAN, DAVID HESBA. Asst. Engr., The San. Dist. of Chicago, Chillicothe, Ill.		Dec. 3, 1912
DYKEMAN, CONRAD FRANCIS. Engr., Underpinning & Foundation Co., 657 Jefferson Ave., Brooklyn, N. Y.		Sept. 3, 1913
ELLIS, GWYNNE WALLACE. Cons. Engr. (Ellis & Lusk), 1413 Waldheim Bldg., Kansas City, Mo.		Sept. 3, 1913
EMANUEL, MORRIS CABLE. Res. Engr. and Supt. of Constr., High School, Fort Smith, Ark.		Sept. 3, 1913
ESPY, THOMAS WILLARD. Asst. Engr., Spring Val. Water Co., 375 Sutter St., San Francisco, Cal.		Sept. 3, 1913
FITTING, HAROLD HANSEN. Office Engr., Dur-yea, Haehl & Gilman, 1318 Humboldt Bank Bldg., San Francisco, Cal.	} Jun. Assoc. M.	May 2, 1911
FLOYD, OZRO NOWLIN. With Morgan Eng. Co., City National Bank Bldg., Dayton, Ohio.		Sept. 3, 1913
FREELAND, FRANCIS EUGENE. Chf. Draftsman, Nashville Bridge Co., 65 Life and Casualty Bldg., Nashville, Tenn.		Sept. 3, 1913
HEWES, FLOYD SINNOCK. Asst. Engr., Constr., A., T. & S. F. Ry., P. O. Box 66, Winslow, Ariz.		Sept. 3, 1913
HOFFMAN, LUTHER ROMBERGER. Structural Engr., Smith, Hinchman & Grylls, 700 Washington Arcade, Detroit, Mich.		Sept. 3, 1913
HURLBUT, WILLIAM WHITEHEAD. Chf. Draftsman, Los Angeles Aqueduct, 636 South Hill St., Los Angeles, Cal.		Sept. 3, 1913
KITTREDGE, FRANK ALVAH. Medford, Ore.	} Jun. Assoc. M.	Mar. 1, 1910
KLUG, LEBRECHT JULIUS. Cons. Engr., Room 40, Mack Blk., Milwaukee, Wis.		Sept. 3, 1913
KNOUSE, HOMER VIRGIL. Civ. Engr., Colorado-Yule Marble Co., Crystal River & San Juan R. R., and Town of Marble, Marble, Colo.		May 7, 1913
LAWRENCE, EGBERT VANHORN. Asst. Engr., Bureau of Highways, Bronx, 1718 Edison Ave., New York City.		Sept. 3, 1913

ASSOCIATE MEMBERS (Continued)		Date of Membership.	
LIGHTNER, GEORGE W. CASS. Asst. Engr.,	} Jun. 11	Feb. 28, 1911	
Structural Dept., G. T. Ry. System,			
Office of Chf. Engr., Montreal, Qué.,		Sept. 23, 1913	
Canada.....			
MCCLEAN, GEORGE THOMAS. Junior Engr., U. S. Engr.			
Office, Fort Stevens, Ore.....		Sept. 13, 1913	
MCDANIEL, GEORGE GLENN. Mills Bldg., San	} Jun.	Mar. 5, 1907	
Francisco, Cal.....			
		Assoc. M.	April 2, 1913
MCWETHY, LEROY. Bridge Insp. and Asst.	} Jun.	Jan. 4, 1910	
Engr., N. W. Pac. R. R., 912 Phelan			
Bldg., San Francisco, Cal.....		Assoc. M.	Sept. 3, 1913
MARTIN, EVAN SEARCH. Res. Engr. in Chg. of New York			
Office of C. A. P. Turner, 30 Church St., New York			
City.....		Sept. 3, 1913	
MILLER, HUGH. Prof. of Civ. Eng., Clarkson	} Jun.	Nov. 30, 1909	
School of Technology; Cons. Engr., 1			
Chestnut St., Potsdam, N. Y.....		Assoc. M.	June 4, 1913
MIX, EDGAR HENRY. Asst. Engr. with J. H. Dockweiler,			
Cons. Engr., 418 Grant Bldg., San Francisco, Cal...		April 2, 1913	
MOORE, CHARLES REA. Res. Engr., Ore.-Wash. R. R. & Nav.			
Co., Perry, Wash.....		Sept. 3, 1913	
MORROW, BEN STODGEN. Asst. Engr., Water Dept., Port-			
land, Ore.....		May 7, 1913	
MURRAY, EVERETT BODMAN. Cons. Engr., Missouri Savings			
Bank Bldg., Kansas City, Mo.....		April 2, 1913	
NICHOLS, JOHN ROBERT. Instr. in Civ. Eng.,	} Jun.	June 1, 1909	
Harvard Univ., 82 Avon Hill St., Cam-			
bridge, Mass.....		Assoc. M.	Sept. 3, 1913
POORE, HERBERT CARLETON. Bituminous Constr.	} Jun.	Jan. 31, 1911	
Engr., 94 Liberty St., East Braintree,			
Mass.....		Assoc. M.	Sept. 3, 1913
POWELL, WILLIAM JENNER. Office Engr., City	} Jun.	Jan. 2, 1906	
Engr.'s Office, Dallas, Tex.....			
		Assoc. M.	Sept. 3, 1913
REEVE, LEROY NORMAN. Asst. Engr., U. S. Reclamation			
Service, Arrowrock, Idaho.....		Sept. 3, 1913	
RUTH, EDGAR KINGSBURY. Asst. Engr., Eng.	} Jun.	May 2, 1911	
Dept., City of Cincinnati, 1321 Locust			
St., Cincinnati, Ohio.....		Assoc. M.	July 2, 1913
SCHLAFLY, ROY KARL. Asst. Prof. of Civ. Eng., Ohio State			
Univ., Columbus, Ohio.....		Sept. 3, 1913	
SHANKLAND, RALPH GRAHAM. Supt. of Con-	} Jun.	Nov. 8, 1909	
crete Constr., E. C. & R. M. Shank-			
land, 1106 The Rookery, Chicago, Ill...		Assoc. M.	Sept. 3, 1913
TROST, ADOLPHUS GUSTAVUS. Engr. and Archt. (Trost &			
Trost), P. O. Box 271, El Paso, Tex.....		Sept. 3, 1913	

ASSOCIATE MEMBERS (Continued)		Date of Membership.
WALKER, ISAAC STANLEY. Asst. Engr., Hering & Gregory, 1547 East 14th St., Brooklyn, N. Y.		Sept. 3, 1913
WALKER, WILLIAM KEMP. Div. Engr., Wichita Div., Mo. Pac. Ry., Wichita, Kans.		Sept. 3, 1913
WASHBURN, FRANK EDWIN. Civ. Engr., Mo. Val. Bridge & Iron Co., Leavenworth, Kans.		Sept. 3, 1913
WATSON, DAVID LOYALL FARRAGUT. Engr. in Chg. of Constr., Marsh & Strong Office Bldg., 1083 West 35th St., Los Angeles, Cal.		Sept. 3, 1913
WHITNEY, HERBERT ANGELL. Hydr. Engr., Dept. of Water, San Diego, Cal.		Sept. 3, 1913
WILSON, JAMES. State Highway Commr.; County Rd. Engr., New Castle County, Montchanin, Del.		Sept. 3, 1913
WRIGHT, STANLEY HUBERT. Asst. Engr., Am. Pipe & Constr. Co., 112 North Broad St., Philadelphia, Pa.		Sept. 3, 1913
WUEST, CHARLES, JR. Asst. City Engr., 4396 Hamilton Ave., Cincinnati, Ohio.		Sept. 3, 1913
JUNIORS		
BOWLUS, FRED DREXEL. Asst. Bridge Engr., County Surv.'s Office, 176 Painter St., Pasadena, Cal.		Sept. 3, 1913
BRIGHT, GRAHAM BERNARD. Instr. in Civ. Eng., Virginia Polytechnic Inst., Blacksburg, Va.		Sept. 3, 1913
CLARKE, ALFRED HENRY. 60 Fenway, Boston, Mass.		Sept. 3, 1913
COLLINS, MERTON CLYDE. Structural Engr., Bureau of Architecture, 473 Sanchez St., San Francisco, Cal.		Sept. 3, 1913
DAVIS, MEYER. 3101 College Ave., Beaver Falls, Pa.		Sept. 3, 1913
GREGORY, WHITNEY IRWIN. Junior Engr., U. S. Engr. Dept., P. O. Box 72, Louisville, Ky.		Sept. 3, 1913
HIRZEL, ALFRED SPARKS. Asst. City Engr., 1319 Shall- cross Ave., Wilmington, Del.		Sept. 3, 1913
HITT, HENRY COLLINS. Care, State Highway Commr., Olympia, Wash.		Sept. 3, 1913
HOLT, ANDREW HALL. Instr. in Civ. Eng., Univ. of Ver- mont, 30 North Winooski Ave., Burlington, Vt.		Sept. 3, 1913
LEE, FRANK OSBORNE. 30 North Winooski Ave., Burling- ton, Vt.		Sept. 3, 1913
MARKS, EDWIN HALL. First Lieut., Corps of Engrs., U. S. A., Washington Barracks, Washington, D. C.		Sept. 3, 1913
SANDSTEDT, CARL EDWARD. Spangle, Wash.		June 4, 1913
SAWYER, ERNEST WALKER. Newcastle, N. B., Canada.		May 7, 1913
STEWART, JAMES ROBERT. 2000 Summit St., Kansas City, Mo.		July 2, 1913

JUNIORS. ( <i>Continued</i> )		Date of Membership.
WAY, WILLIAM FLOYD. Draftsman, Stone & Webster Constr. Co., Fresno, Cal.....		Sept. 3, 1913
WILSON, CALVIN LOUGHRIDGE. 509 F. & M. Bldg., Fort Worth, Tex. ....		Sept. 3, 1913

## CHANGES OF ADDRESS

## MEMBERS

- AMBURN, WILLIAM WESLEY. McMinnville, Ore.  
 APPLETON, THOMAS. Supt. of Constr., U. S. Treasury Dept., New Post  
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 N. Y.  
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 & A. L. Stone Co., 841 Fifty-sixth St., Oakland, Cal.  
 CONARD, CLARENCE KNIGHT. Const. Engr., Raleigh, Charlotte & South.  
 Ry., Charlotte, N. C.  
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 Rue de Chaillot, Paris, France.  
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 land, Ore.  
 FAUNTLEROY, JAMES DEARING. Gen. Supt. of Constr., Goldsborough Constr.  
 Co., Lynch Station, Va.  
 FESSENDEN, RALPH SETH. Prescott, Ariz.  
 GAULT, HOMER JOHNSTON. Painesville, Ohio.  
 HALL, LOUIS WELLS. 401 Am. Trust Bldg., Birmingham, Ala.  
 HARTMAN, RUSSELL THEODORE. Vice-Pres. and Gen. Mgr., Iowa Steel &  
 Iron Works, Inc., 112 North 29th St., Cedar Rapids, Iowa.  
 HAWLEY, RALPH STEVENSON. 2531 Chilton Way, Berkeley, Cal.  
 HILGARD, KARL EMIL. Cons. Engr., Klosbachstrasse No. 159, Zurich, V.,  
 Switzerland.  
 HOWE, WILSON TYLER. 102 Boston Ave., West Medford, Mass.



## MEMBERS (Continued)

- JERVEY, JAMES POSTELL. Maj., Corps of Engrs., U. S. A., U. S. Engr. Office, 5101 Wheeling, W. Va.
- JONES, HOWARD MURFREED. Member, Eng. Board, U. S. Interstate Comm. 2101 merce Comm., Washington, D. C.
- LANGTON, JOHN. Cons. Engr., 233 Broadway, New York City.
- LATHROP, JAY COWDEN. Liberty and Lexington Sts., Baltimore, Md.
- LEA, SAMUEL HILL. City Engr., Charlotte, N. C.
- LOVE, ANDREW CAVITT. Associate Prof. of Civ. Eng., Agri. and Mechanical Coll. of Texas, College Station, Tex.
- MACDONALD, CHARLES. (Past-President.) 812 Riverside Ave., Trenton, N. J.
- PICKETT, WILLIAM DOUGLAS. 228 Campsie Pl., Lexington, Ky.
- QUIMBY, HENRY HODGE. Chf. Engr., Dept. of City Transit, The Bourse, Philadelphia, Pa.
- RANDOLPH, ISHAM. Cons. Engr., Suite 1807, Commercial National Bank Bldg., Chicago, Ill.
- REABURN, DE WITT LEE. 1108 Arapahoe St., Los Angeles, Cal.
- REEDY, OLIVER THOMAS. Engr., U. S. Reclamation Service, Grand Junction, Colo.
- SUHR, OTTO BRUNO. R. F. D. No. 10, Box 75X, Los Angeles (Res., 326 Crescent Heights Boulevard, Hollywood), Cal.
- TAYLOR, JAMES TOWNSEND. Cons. Hydr. Engr., P. O. Box 799, Honolulu, Hawaii.
- THOMAS, DAVID GORTON. Chf. Engr., The Denver Union Water Co., Denver, Colo.
- TREADWELL, LEE. Vice-Pres. and Chf. Engr., Union Bridge & Constr. Co., 2815 Olive St., Kansas City, Mo.
- WALSH, GEORGE SCHERZER. 2110 Garfield St., Lincoln, Nebr.
- WEEKS, WILLIAM CHARLES. Cons. and Contr. Engr., Union Bay, Vancouver Island, B. C., Canada.
- WINSLOW, BENJAMIN EMANUEL. Structural Engr., Waukesha, Wis.
- YAMAGUCHI, JUNNOSUKE. Cons. Engr., No. 5, Shin-Riudo, Azabu, Tokyo, Japan.

## ASSOCIATE MEMBERS

- ANDERSON, CHARLES LOUIS BATES. Cons. Municipal Engr., P. O. Box 149, Portsmouth, Va.
- BEEBE, JAMES WILBUR. 707 East Acacia St., Tropico, Cal.
- BEGG, ROBERT BURNS HALDANE. Prof. of Civ. Eng., Virginia Polytechnic Inst., Blacksburg, Va.
- BILGER, HARRY EDMUND. Care, U. S. Office of Public Rds., Washington, D. C.
- BINGHAM, CLARENCE ARMINGER. Cons. and Contr. Engr., City Hall, Elizabeth, N. J.



## ASSOCIATE MEMBERS (Continued)

- BONNETT, CHARLES PIERRE. Asst. Engr., Topographical Bureau, Borough of The Bronx, New York City; Res. 265 Webster Ave., New Rochelle, N. Y.
- BROOKING, JOSEPH HUGH. Asst. Engr., Office of Chf. Engr., St. L. & S. F. R. R., Frisco Bldg., St. Louis, Mo.
- BROWN, GROVER CHARLES. 204 Fairmount Ave., Ithaca, N. Y.
- BUNDY, OSCAR HAROLD. Chf. Engr., Washington & Old Dominion Ry., 3506 M St., N. W., Washington, D. C.
- CAMERON, JOHN BOBBS. Div. Engr., B. & O. R. R., 416 Euclid Ave., New Castle, Pa.
- CAMERON, KENNETH MACKENZIE. Prin. Asst. to Asst. Chf. Engr., Public Works of Canada, Ottawa, Ont., Canada.
- CLAPP, SIDNEY KINGMAN. Asst. Engr., Board of Water Supply, Ashokan, N. Y.
- COLLIER, WILLIAM NEVILLE. Supt. of Constr., U. S. Public Bldgs., Room 144, Post Office Bldg., Boston, Mass.
- COMSTOCK, ARTHUR FRANCIS. Associate in Ry. Eng., Univ. of Illinois, Urbana, Ill.
- COTHER, ALBERT ADIEL. 2505 Red River St., Austin, Tex.
- DAVIES, WILLIAM GOMER. Lower Lake, Cal.
- EARL, AUSTIN WILLMOTT. 379 Cavour St., Oakland, Cal.
- EBERLY, CLARENCE FREDERICK. Topographer, U. S. Geological Survey, Washington, D. C.
- ELLIS, GUERNSEY WILLIAM. Asst. Engr., State Highway Dept., 709 South Salina St., Syracuse, N. Y.
- ELY, JOHN ANDREWS. 117 West 82d St., New York City.
- FARLEY, WILLIAM SANBORN. 21 Ardmore St., Kensington Park, Berkeley, Cal.
- FISHER, WILBUR HOWARD. Care, Graff Constr. Co., 12th St. and Liberty Ave., Kansas City, Mo.
- FROST, WILLIS GEORGE. Redwood City, Cal.
- FUQUA, PAUL DAVID. With Morgan Eng. Co., Dayton Flood Prevention Survey and Plans, City National Bank Bldg., Dayton, Ohio.
- GLOVER, PHILIP HOLDEN. Harrington, Me.
- GRAM, LEWIS MERRITT. Prof. of Structural Eng., Univ. of Michigan, 912 Oakland Ave., Ann Arbor, Mich.
- GREGG, TRESHAM DAMES. Cons. Engr., 922 Plymouth Bldg., Minneapolis, Minn.
- HARBECK, HENRY RUSSELL. Lyons, Iowa.
- HARRISON, RUSSELL EDWIN. 720 Lowell St., Ypsilanti, Mich.
- HAVENS, RALPH DEWITT. Melbourne Rd., Norwalk, Conn.
- HAYES, ANDREW JENKINS. 132 Emery St., Berlin, N. H.
- HIGGINS, HERMAN KEENE. Care, Chf. Engr., Culebra, Canal Zone, Panama.
- HINKLE, ALBERT HARRISON. Deputy Highway Commr., 1896 Summit St., Columbus, Ohio.

ASSOCIATE MEMBERS (*Continued*)

- HOGAN, JOHN PHILIP. 100 Barrett Boulevard, Tompkinsville, N. Y.
- HUTCHINS, HARRY CROCKER. Asst. Engr., Dept. of Public Works, Borough of Manhattan, Park Row Bldg., New York City (Res., 221 Eastern Parkway, Brooklyn, N. Y.).
- JONES, LEWIS ALLEN. Drainage Engr., U. S. Dept. of Agri., Washington, D. C.
- KEENE, WILLIAM ARCHIBALD, JR. 2503 Tracy Ave., Kansas City, Mo.
- KLEIN, ROY ALTON. Room 27, Terminal Bldg., Spokane, Wash.
- LANGLEY, CLARENCE ERWIN. 1117 Harmon Pl., Minneapolis, Minn.
- LARMON, FRANK PERRY. 1781 Middlesex St., Lowell, Mass.
- LAURGAARD, OLAF. Project Engr., Tumalo Irrig. Project, State of Oregon, Laidlaw, Ore.
- LAWRIE, JAMES MUIR. London Mgr., Trussed Concrete Steel Co., 309 Central House, Kingsway, W. C., London, England.
- MACKALL, JOHN NATHANIEL. Engr. of Surveys, State Rds. Comm. of Maryland, 601 Garrett Bldg., Baltimore, Md.
- MACLEAN, WILLIAM EUSTACE. 911 Roger's Bldg., Vancouver, B. C., Canada.
- McKENZIE, ANDREW JACKSON. Vice-Pres. and Gen. Mgr., McKenzie-Williams Constr. Co., 310 Dan Waggoner Bldg., Fort Worth, Tex.
- MILLER, HIRAM. R. F. D., Rockfall, Conn.
- MONTERO, JULIO DANIEL. Chf. Engr., Bureau of Rds. and Bridges, Apartado 837, Havana, Cuba.
- MORRIS, CHARLES CHESTER. Junior Engr., U. S. A., Corning, Iowa.
- OLSON, NORMAN T. Asst. Engr., U. S. Reclamation Service, Babb, Mont.
- PAGE, EDWIN RANDOLPH. Min. Engr., The Gauley Mountain Coal Co., Ansted, W. Va.
- PIERCE, CHARLES HENRY. Asst. Engr., U. S. Geological Survey, 18 Federal Bldg., Albany, N. Y.
- POMMERER, ROBERT WILLIAM. With Board of Water Supply, City of New York, 8 North High St., Mt. Vernon, N. Y.
- PRIME, ALFRED COXE. Engr., P. R. R., 1008 Spruce St., Philadelphia, Pa.
- RAIDER, HARRY ADAM. Care, American Consul, Hankow, China.
- RAMSBOTHAM, JOSHUA FIELDEN. Director of Lighthouses, Central Offices, Melbourne, Victoria, Australia.
- REID, JOHN WINFIELD. Bridge Engr., C. & A. R. R., 1004 Transportation Bldg., Chicago, Ill.
- RHETT, ALBERT HASKELL. 101 Columbia Heights, Brooklyn, N. Y.
- RICE, JOHN MARIE THOMAS. Asst. Engr., Morris Knowles, Cons. Engr. (Res., 5307 Butler St.), Pittsburgh, Pa.
- RICHMOND, JACKSON LITTON. Gen. Contr., Little Falls, N. Y.
- ROJAS, PEDRO JOSÉ. Director del Dique y Astillero Nacional, Puerto Cabello, Venezuela.
- SHAFFER, JAMES CHARLES FORSYTHE. Supt., Samuel Austin & Son Co., Thorold, Ont., Canada.

## ASSOCIATE MEMBERS (Continued)

- SHEPARD, EDWARD LEWIS. Asst. Prof., Civ. Eng., Clemson Agri. Coll.,  
Clemson College, S. C.
- SHERTZER, TYRRELL BRADBURY. 500 West 143d St., New York City.
- SHOECRAFT, EZRA COLLIN. City Engr., Flint, Mich.
- SMITH, CHESTER WASON. 665 East 23d St., Brooklyn, N. Y.
- SMITH, CLAIBORNE ELLIS. La Mesa, Cal.
- SMITH, HUNTINGTON. Div. Engr., N. Y. C. & St. L. R. R. (Res., 2054 East  
102d St.), Cleveland, Ohio.
- SMITH, WALTER DORR. Asst. Engr., Harbor Dept. of Los Angeles, 4210  
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- SNELL, HARRY BRONSON. Chf. Engr., Million Bros. Co., 34 West 33d St.,  
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- STILES, OTHO WILLIAM. Winfield, Iowa.
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- TAYLOR, CHESTER ANTRIM. Supt. of Constr., Logansport High School, for  
Herbert L. Bass & Co., Care, New High School, Logansport, Ind.
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- THOMSON, WARREN BROWN. Valuation Engr., W. & L. E. R. R., 512 Elec.  
Bldg., Cleveland, Ohio.
- TYLER, ROY DEXTER. Cons. Engr., Casper, Wyo.
- VANDERVOORT, BENJAMIN FRANKLIN. Asst. Engr., Dept. of State Engr.,  
Barge Canal Office, Medina, N. Y.
- VILLA, MIGUEL. Engr., Bowers Southern Dredging Co., Miami, Fla.
- VILLALON, JOSÉ RAMON. Secy. of Public Works, Public Works Dept., Ha-  
vana, Cuba.
- VON SILLER, ALFRED. Dist. Engr., U. S. Engr. Office, Newbern, N. C.
- WALKER, EDWARD MANSFIELD. Grade Separation Engr., Mich. Cent. R. R.  
(Res., 561 Montclair Ave.), Detroit, Mich.
- WASSNER, MICHAEL. 263 Hicks St., Brooklyn, N. Y.
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Navy Dept., Washington, D. C.
- WHITSIT, LYLE ANTRIM. Care, Public Service Comm., Tribune Bldg., New  
York City.
- WILSON, ROBERT BROWN MURPHY. Care, Levering & von Remsperg, 1624  
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- WILSON, THAD LOREN. 154 Nassau St., New York City.
- WINN, WALTER SCOTT. U. S. Asst. Engr., Engr. Office, Custom House,  
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- WOOD, CHARLES HANCOCK. Bridge Designer, New York State Barge Canal,  
186 State St., Albany, N. Y.

## ASSOCIATE

- MARSH, ALBERT LEREAUX. With Brooklyn Rapid Transit System, 85 Clin-  
ton St., Room 211, Brooklyn, N. Y.

## JUNIORS

- BABBITT, HAROLD EATON. Instr. in San. and Municipal Eng., Univ. of Illinois, 806 West California St., Urbana, Ill.
- BALDWIN, THOMAS ABBOTT. 9 North Front St., Harrisburg, Pa.
- BLOEMKER, HAROLD WILLIAM. 1441 West Venango St., Philadelphia, Pa.
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- DERRICK, JOHN RUSSELL. Instrumentman, M. of W., N. & W. Ry., Box 171, Graham, Va.
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- HUGHES, NORMAN. Jackson, N. C.
- KLINGNER, LOUIS WILLIAM. Care, The Dominion Constr. Co., Ltd., Belleville, Ont., Canada.
- KNISKERN, LEWIS THAYER. Gen. Timekeeper, Thompson-Starrett Co., 51 Wall St. (Res., 124 West 80th St.), New York City.
- LATIMER, CLAUDE ALFRED. Insp., Board of Water Supply, New York City, City Aqueduct Dept., Bay View Terrace, Beach Hurst, N. Y.
- LEWIS, HAROLD MACLEAN. 172 Nott Terrace, Schenectady, N. Y.
- MERRITT, CHARLES EDWARD. 31 Clarendon Bldg., Utica, N. Y.
- MOORE, JAMES GATES. Care, Trumbo Dredging Co., Key West, Fla.
- MORRISON, WILLIAM GROVER. Contr. Engr., Marsh Eng. Co., Des Moines, Iowa.
- SMITH, WILLIAM DURKEE. 4337 Phinney Ave., Seattle, Wash.
- STEESE, JAMES GORDON. First Lieut., Corps of Engrs., U. S. A., Engr. Dept., West Point, N. Y.
- STROMQUIST, WALTER GOTTFRID. With The San. Dist. of Chicago, 39th St. Pumping Station, Chicago, Ill.
- TUFTS, WILLIAM. Sudbury, Mass.
- WACHTEL, LOUIS. Asst. Engr., State Highway Comm., Gloversville, N. Y.
- WARD, ROY ELSER. With Aluminum Co. of America, 2402 Oliver Bldg., Pittsburgh, Pa.

## REINSTATEMENT

## ASSOCIATE MEMBER

Date of  
Reinstatement.

SCOTT, JOHN KUHN..... Sept. 3, 1913

## RESIGNATIONS

## MEMBERS

Date of  
Resignation.

PEARY, ROBERT EDWIN..... Sept. 3, 1913

RICHARDS, JOSEPH THOMAS..... Sept. 3, 1913

## ASSOCIATE MEMBER

STANAGE, JOHN LYNCH..... Sept. 3, 1913

## DEATHS

ADAMS, ARTHUR LINCOLN. Elected Member, October 2d, 1895; died September 17th, 1913.

DUNKLEE, JOHN BUTLER. Elected Member, April 2d, 1873; died July 7th, 1913.

FOUQUET, JOHN DOUGLAS. Elected Member, June 3d, 1885; died September 18th, 1913.

LEE, FRANCIS VALENTINE TOLDERVY. Elected Member, February 1st, 1910; died August 17th, 1913.

ROSS, JAMES. Elected Member, September 6th, 1882; died September 20th, 1913.

## Total Membership of the Society, October 2d, 1913,

7143.



# MONTHLY LIST OF RECENT ENGINEERING ARTICLES OF INTEREST

(September 2d to October 1st, 1913)

NOTE.—This list is published for the purpose of placing before the members of this Society, the titles of current engineering articles, which can be referred to in any available engineering library, or can be procured by addressing the publication directly, the address and price being given wherever possible.

## LIST OF PUBLICATIONS

In the subjoined list of articles, references are given by the number prefixed to each journal in this list:

- (1) *Journal*, Assoc. Eng. Soc., Boston, Mass., 30c.
- (2) *Proceedings*, Engrs. Club of Phila., Philadelphia, Pa.
- (3) *Journal*, Franklin Inst., Philadelphia, Pa., 50c.
- (4) *Journal*, Western Soc. of Engrs., Chicago, Ill., 50c.
- (5) *Transactions*, Can. Soc. C. E., Montreal, Que., Canada.
- (6) *School of Mines Quarterly*, Columbia Univ., New York City, 50c.
- (7) *Gesundheits Ingenieur*, München, Germany.
- (8) *Stevens Institute Indicator*, Hoboken, N. J., 50c.
- (9) *Engineering Magazine*, New York City, 25c.
- (10) *Cassier's Magazine*, New York City, 25c.
- (11) *Engineering* (London), W. H. Wiley, New York City, 25c.
- (12) *The Engineer* (London), International News Co., New York City, 35c.
- (13) *Engineering News*, New York City, 15c.
- (14) *Engineering Record*, New York City, 10c.
- (15) *Railway Age Gazette*, New York City, 15c.
- (16) *Engineering and Mining Journal*, New York City, 15c.
- (17) *Electric Railway Journal*, New York City, 10c.
- (18) *Railway and Engineering Review*, Chicago, Ill., 15c.
- (19) *Scientific American Supplement*, New York City, 10c.
- (20) *Iron Age*, New York City, 20c.
- (21) *Railway Engineer*, London, England, 1s. 2d.
- (22) *Iron and Coal Trades Review*, London, England, 6d.
- (23) *Railway Gazette*, London, England, 6d.
- (24) *American Gas Light Journal*, New York City, 10c.
- (25) *Railway Age Gazette*, Mechanical Edition, New York City, 20c.
- (26) *Electrical Review*, London, England, 4d.
- (27) *Electrical World*, New York City, 10c.
- (28) *Journal*, New England Water-Works Assoc., Boston, Mass., \$1.
- (29) *Journal*, Royal Society of Arts, London, England, 6d.
- (30) *Annales des Travaux Publics de Belgique*, Brussels, Belgium, 4 fr.
- (31) *Annales de l'Assoc. des Ing. Sortis des Ecoles Spéciales de Gand*, Brussels, Belgium, 4 fr.
- (32) *Mémoires et Compte Rendu des Travaux*, Soc. Ing. Civ. de France, Paris, France.
- (33) *Le Génie Civil*, Paris, France, 1 fr.
- (34) *Portefeuille Economiques des Machines*, Paris, France.
- (35) *Nouvelles Annales de la Construction*, Paris, France.
- (36) *Cornell Civil Engineer*, Ithaca, N. Y.
- (37) *Revue de Mécanique*, Paris, France.
- (38) *Revue Générale des Chemins de Fer et des Tramways*, Paris, France.
- (39) *Technisches Gemeindeblatt*, Berlin, Germany, 0. 70m.
- (40) *Zentralblatt der Bauverwaltung*, Berlin, Germany, 60 pfg.
- (41) *Elektrotechnische Zeitschrift*, Berlin, Germany.
- (42) *Proceedings*, Am. Inst. Elec. Engrs., New York City, \$1.
- (43) *Annales des Ponts et Chaussées*, Paris, France.
- (44) *Journal*, Military Service Institution, Governors Island, New York Harbor, 50c.
- (45) *Colliery Engineer*, Scranton, Pa., 25c.
- (46) *Scientific American*, New York City, 15c.
- (47) *Mechanical Engineer*, Manchester, England, 3d.
- (48) *Zeitschrift, Verein Deutscher Ingenieure*, Berlin, Germany, 1. 80m.
- (49) *Zeitschrift für Bauwesen*, Berlin, Germany.
- (50) *Stahl und Eisen*, Düsseldorf, Germany.
- (51) *Deutsche Bauzeitung*, Berlin, Germany.
- (52) *Rigische Industrie-Zeitung*, Riga, Russia, 25 kop.
- (53) *Zeitschrift, Oesterreichischer Ingenieur und Architekten Verein*, Vienna, Austria, 70h.
- (54) *Transactions*, Am. Soc. C. E., New York City, \$12.

- (55) *Transactions*, Am. Soc. M. E., New York City, \$10.  
 (56) *Transactions*, Am. Inst. Min. Engrs., New York City, \$6.  
 (57) *Colliery Guardian*, London, England, 5d.  
 (58) *Proceedings*, Engrs.' Soc. W. Pa., 803 Fulton Bldg., Pittsburgh, Pa., 50c.  
 (59) *Proceedings*, American Water-Works Assoc., Troy, N. Y.  
 (60) *Municipal Engineering*, Indianapolis, Ind., 25c.  
 (61) *Proceedings*, Western Railway Club, 225 Dearborn St., Chicago, Ill., 25c.  
 (62) *Industrial World*, 59 Ninth St., Pittsburgh, Pa., 10c.  
 (63) *Minutes of Proceedings*, Inst. C. E., London, England.  
 (64) *Power*, New York City, 5c.  
 (65) *Official Proceedings*, New York Railroad Club, Brooklyn, N. Y., 15c.  
 (66) *Journal of Gas Lighting*, London, England, 6d.  
 (67) *Cement and Engineering News*, Chicago, Ill., 25c.  
 (68) *Mining Journal*, London, England, 6d.  
 (69) *Der Eisenbau*, Leipzig, Germany.  
 (71) *Journal*, Iron and Steel Inst., London, England.  
 (71a) *Carnegie Scholarship Memoirs*, Iron and Steel Inst., London, England.  
 (72) *American Machinist*, New York City, 15c.  
 (73) *Electrician*, London, England, 18c.  
 (74) *Transactions*, Inst. of Min. and Metal., London, England.  
 (75) *Proceedings*, Inst. of Mech. Engrs., London, England.  
 (76) *Brick*, Chicago, Ill., 10c.  
 (77) *Journal*, Inst. Elec. Engrs., London, England, 5s.  
 (78) *Beton und Eisen*, Vienna, Austria, 1, 50m.  
 (79) *Forscheraarbeiten*, Vienna, Austria.  
 (80) *Tonindustrie Zeitung*, Berlin, Germany.  
 (81) *Zeitschrift für Architektur und Ingenieurwesen*, Wiesbaden, Germany.  
 (82) *Mining and Engineering World*, Chicago, Ill., 10c.  
 (83) *Gas Age*, New York City, 15c.  
 (84) *Le Ciment*, Paris, France.  
 (85) *Proceedings*, Am. Ry. Eng. Assoc., Chicago, Ill.  
 (86) *Engineering-Contracting*, Chicago, Ill., 10c.  
 (87) *Railway Engineering and Maintenance of Way*, Chicago, Ill., 10c.  
 (88) *Bulletin of the International Ry. Congress Assoc.*, Brussels, Belgium.  
 (89) *Proceedings*, Am. Soc. for Testing Materials, Philadelphia, Pa., \$5.  
 (90) *Transactions*, Inst. of Naval Archts., London, England.  
 (91) *Transactions*, Soc. Naval Archts. and Marine Engrs., New York City.  
 (92) *Bulletin*, Soc. d'Encouragement pour l'Industrie Nationale, Paris, France.  
 (93) *Revue de Métallurgie*, Paris, France, 4 fr. 50.  
 (94) *The Boiler Maker*, New York City, 10c.  
 (95) *International Marine Engineering*, New York City, 20c.  
 (96) *Canadian Engineer*, Toronto, Ont., Canada, 10c.  
 (98) *Journal*, Engrs. Soc. Pa., Harrisburg, Pa., 30c.  
 (99) *Proceedings*, Am. Soc. of Municipal Improvements, New York City, \$2.  
 (100) *Professional Memoirs*, Corps of Engrs., U. S. A., Washington, D. C., 50c.  
 (101) *Metal Worker*, New York City, 10c.  
 (102) *Organ für die Fortschritte des Eisenbahnwesens*, Wiesbaden, Germany.  
 (103) *Mining and Scientific Press*, San Francisco, Cal., 10c.  
 (104) *The Surveyor and Municipal and County Engineer*, London, England, 6d.  
 (105) *Metallurgical and Chemical Engineering*, New York City, 25c.  
 (106) *Transactions*, Inst. of Min. Engrs., London, England, 6s.  
 (107) *Schweizerische Bauzeitung*, Zürich, Switzerland.  
 (108) *Southern Machinery*, Atlanta, Ga., 10c.

## LIST OF ARTICLES

## Bridges.

- The Strauss Direct Lift Bridge.\* (15) Mar. 18.  
 New Coal Handling Bridge at Duluth, Minn.\* (15) Mar. 19.  
 Scherzer Rolling Lift Bridges.\* (15) Mar. 20.  
 The Crooked River Bridge of the Oregon Trunk Railway.\* (23) Aug. 29.  
 Morris County Turnpike Arch at Hopatcong, N. J., D., L. & W. R. R.\* A. M. Wolf. (87) Sept.  
 Internal Temperature Range in Concrete Arch Bridges. C. S. Nichols and C. B. McCullough. (From *Bulletin*, Iowa State College Eng. Exper. Station.) (87) Sept.  
 An Alpine Bridge, the Bietschtal Bridge on the Bernese Alps Electric Railway.\* (10) Sept.  
 Design of Large Bridges with Special Reference to the Quebec Bridge.\* Ralph Modjeski. (3) Sept.

\*Illustrated.

1221. *Engineering*. The *Eng. & Arch. Rev.* 1951, 10, 1, 1-10.
1222. *Eng. & Arch. Rev.* 1951, 10, 1, 1-10.
1223. *Eng. & Arch. Rev.* 1951, 10, 1, 1-10.
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1299. *Eng. & Arch. Rev.* 1951, 10, 1, 1-10.
1300. *Eng. & Arch. Rev.* 1951, 10, 1, 1-10.

# LIST OF ABSTRACTS

The following is a list of abstracts of the literature published in the field of engineering during the year 1951. The list is arranged in alphabetical order of the author's name. The first column contains the number of the abstract, the second column contains the author's name, the third column contains the title of the abstract, and the fourth column contains the journal or book in which the abstract is published.

**Bridges—(Continued).**

- Data for Use in Designing Culverts and Short-Span Highway Bridges.\* (From *Bulletin*, Office of Public Roads.) (86) Sept. 3.
- Types of Surfacing to be Adopted on Bridges and Viaducts. (Paper read before the Third Inter. Road Congress.) (86) Sept. 3.
- Progress on the Lower Ganges Bridge, Northern Bengal, India.\* M. D. Braysbay. (13) Sept. 4; (12) Sept. 12.
- New Ohio River Bridge at Kenova, W. Va.\* (15) Sept. 5.
- High Steel Viaduct in New Zealand. (14) Sept. 6.
- The Bridges of Cleveland; Present Plans and Possibilities. Henry G. Tyrrell. (From the *Ohio Architect, Engineer and Builder*.) (62) Sept. 8.
- Reinforcing an Old Cantilever Bridge, Philadelphia, Penn.\* Henry H. Quimby. (13) Sept. 11.
- Erection of a Cable Lift Bridge.\* W. J. Howard. (13) Sept. 11.
- Concrete Specifications for Bridge Substructure. (14) Sept. 13.
- Analysis of Steel Towers, Determination of Action of Wind Loads and Design of Tower Bents.\* Isidore Delson. (14) Sept. 13.
- The Halen Reinforced-Concrete Bridge, Bern, Switzerland.\* (13) Sept. 18.
- Twin Scherzer Bridges at Dublin.\* (12) Sept. 19.
- Substructure for East River Bridge Division, New York Connecting Railway.\* (14) Sept. 20.
- Sawing a Bridge with a Wire.\* Jaques Boyer. (46) Sept. 20.
- The Reconstruction of the Old Chain Bridge at Newburyport, Mass.\* Edward C. Sherman. (13) Sept. 25.
- New York State Highway Department Bridges, Standard Types and Details of Steel Girder and Truss Spans for Suburban Traffic.\* (14) Sept. 27.
- Ponts Basculants de Selzaete sur le Canal de Gand à Terneuzen (Belgique).\* (33) Sept. 13.
- Ergebnisse der Belastungsproben am Bietschal-Viadukt der Lötschbergbahn. (107) Sept. 6.
- Die neue Verordnung betreffend Berechnung und Untersuchung der eisernen Brücken und Hochbauten der Aufsicht des Bundes unterstellten Transportanstalten (vom 7. Juni 1913). A. Rohn. (107) Sept. 6.
- Zum Bau der Walchebrücke in Zürich.\* Fritz Locher. (78) Sept. 13.
- Neuere Beiträge zur Frage der Verwendung hochwertiger Materialien im Brückenbau.\* F. Bohny. (50) Sept. 18.

**Electrical.**

- Design of High Voltage Transmission Lines.\* Julian C. Smith. (5) Vol. 26, Pt. 2.
- Electricity Supply in Dover.\* (26) Serial beginning Aug. 29.
- The Drawn Tungsten Filament. O. Kruh. (Abstract from *Electrotechnik und Maschinenbau*.) (73) Aug. 29.
- Traffic Distribution in Manual Telephone Exchanges.\* J. Baumann. (73) Aug. 29.
- Radio-Telegraphy at Gamages.\* (73) Aug. 29.
- Luffing Cranes at Gladstone Dock, Liverpool. (12) Aug. 29.
- Electric Furnaces, Their Design, Characteristics and Commercial Application. Woolsey McA. Johnson and George N. Sieger. (105) Sept.
- The Advancement of the Mercury Arc Rectifier. Harry F. Perkins. (105) Sept.
- The Relative Cost of Three-Phase and Single-Phase Transformers. V. L. Hollister. (9) Sept.
- The Dielectric Properties of Non-Conductors.\* Phillips Thomas. (3) Sept.
- The Relation of Matter to Electricity. Arthur Willis Goodspeed. (3) Sept.
- Municipal Electric Light for Cleveland, Ohio. (60) Sept.
- Springfield Electric-Light Plant.\* Warren O. Rogers. (64) Sept. 2.
- Pressure Regulation.\* C. Turnbull. (26) Sept. 5.
- Rules for Insulated Conductors.\* (26) Sept. 5.
- Electrification of the Salt Union Works.\* (26) Sept. 5.
- An 80-Ton Cantilever Crane at East Cowes.\* (26) Sept. 5.
- An Experimental Alternating Plant.\* R. M. Archer. (73) Sept. 5.
- Electrothermal Phenomena at the Contact of Two Conductors, with a Theory of a Class of Radio-Telegraph Detectors.\* W. H. Eccles. (Abstract of paper read before the Physical Soc.) (73) Sept. 5.
- Intensified Lighting of Business Thoroughfares.\* (27) Sept. 6.
- Central-Station Developments at Hartford.\* (27) Sept. 6.
- Data Concerning Incandescent-Lamp Reflectors. G. H. Stickney and A. L. Powell. (27) Sept. 6.
- Electric Transmission Equipment, Panama Canal. (18) Sept. 6.
- Aluminum-Cell Lightning Arrester.\* John A. Randolph. (64) Sept. 9.
- Synchronous and Asynchronous Reactance.\* J. Rezelman. (73) Sept. 12.
- Electrical Installation at a French Iron Works.\* Alfred Gradenwitz. (26) Sept. 12.
- High-Frequency Alternators and Their Use in Radio-Telegraphy and Telephony.\* (26) Sept. 12.

\*Illustrated.





**Electrical—(Continued).**

- Financial Needs of the Electrical Industry. Frank A. Vanderslip. (Paper read before the Assoc. Island Meeting.) (27) Sept. 13.  
 Development of Alabama Water Powers.\* (27) Sept. 13.  
 Approximate Calculations of Transmission Lines with Distributed Capacity.\* Bradley T. McCormick. (96) Sept. 18.  
 The Nature of the Electromagnetic Waves Employed in Radio-Telegraphy and the Mode of Their Propagation.\* G. W. O. Howe. (Paper read before the British Assoc.) (73) Sept. 19.  
 Atmospheric Refraction in Wireless Telegraphy. W. H. Eccles. (Paper read before the British Assoc.) (73) Sept. 19.  
 Short Heat Tests of Electrical Machines.\* W. R. Cooper. (Paper read before the British Assoc.) (73) Sept. 19.  
 Electrical Equipment of a Department Store.\* (27) Sept. 20.  
 Graphic Solution for Illumination Problems.\* Neville S. Dickinson. (27) Sept. 20.  
 Controllers for A. C. Fire Pump Motors.\* Harrison Pierce Reed. (62) Sept. 22.  
 Transformer Characteristics.\* Edward T. Moore. (64) Serial beginning Sept. 23.  
 Commonwealth Edison System Operating Features.\* (27) Sept. 27.  
 Les Distributions d'Electricité à Tension Supérieure à 100 000 Volts, aux Etats-Unis. (33) Sept. 6.  
 Entwicklung und Bedeutung der elektrischen Anlagen Oberschlesiens.\* W. Vogel. (41) Serial beginning Aug. 28.  
 Ein neuer elektrodynamischer Phasenmesser. Konrad Gruhn. (41) Aug. 28.  
 Einfluss von Erschütterungen und Erwärmungen auf die magnetischen Eigenschaften von Eisenblech.\* E. Gumlich und W. Steinhaus. (41) Sept. 4; (50) Sept. 4.  
 Bogenlicht und Pressgas für Strassenbeleuchtung. (Cost.) (41) Sept. 11.  
 Elektromagnetische Wellen in elementarer Behandlungsweise.\* Karl Willy Wagner. (41) Sept. 11.  
 Das Hochspannungsnetz der Stadt Bremen.\* Chr. Laue. (41) Sept. 18.  
 Phasenkompensation und Stabilisierung von Mehrphasen-Reihenschlussmotoren. J. Jonas. (41) Sept. 18.

**Marine.**

- Ship Engine-Room Ventilation.\* (12) Aug. 29.  
 The Largest Steamer Built on the River Loire.\* (12) Aug. 29.  
 Suggestions Concerning a New Development of Gyroscope Mechanism.\* J. W. Gordon. (11) Aug. 29.  
 The Quadruple-Screw Steamers *Osterdyk* and *Westerdyk*.\* (11) Aug. 29.  
 The New Gladstone Wet and Dry Dock, Liverpool, Eng.\* (13) Sept. 4.  
 The Injury to the Hull of the U. S. S. *Arkansas* by Grounding.\* (13) Sept. 4.  
 The French Battleship *Courbet*.\* (12) Sept. 5.  
 Development in Marine Engines. A. Scott Younger. (Abstract of paper read before the Scientific Soc. of the Royal Technical College, Glasgow.) (47) Sept. 12.  
 The Chilean Torpedo-Boat Destroyer *Almirante Lynch*.\* (11) Serial beginning Sept. 12.  
 "Dreadnought" Floating Dock for the British Battleships.\* Frederick C. Coleman. (19) Sept. 20.  
 Le Problème de la Direction des Navires Modernes et des Appareils de Navigation Aérienne.\* L. Mascart. (32) June.  
 Note sur les Compas de Marine.\* L. Ravier. (32) June.  
 Note sur l'Emploi d'un Batardeau Métallique Demi-Circulaire.\* Gassier. (43) July.  
 Entwurf und Berechnung von Lüftanlagen für Schiffe.\* Knipping. (48) Aug. 2.  
 Beziehungen zwischen den Abmessungen der Anfahrventile und dem Anfahrvorgang bei Schiffsdümaschinen.\* K. Abelein. (48) Aug. 2.  
 Ueber neueste Tauchergeräte.\* Vincenz Pollack. (53) Sept. 5.

**Mechanical.**

- The Slow Combustion of Coal-Dust and Its Thermal Value.\* F. E. E. Lamplough and A. Muriel Hill. (106) Vol. 45, Pt. 5.  
 Developments in Machine Shop Practice During the Last Decade: Report of Subcommittee, Am. Soc. Mech. Engrs. on Machine Shop Practice. (55) Vol. 34.  
 The Vaucrain Drill.\* A. C. Vaucrain and Henry V. Wille. (55) Vol. 34.  
 Increase of Bore of High-Speed Wheels by Centrifugal Stresses.\* Sanford A. Moss. (55) Vol. 34.  
 Investigation of Efficiency of Worm Gearing for Automobile Transmission.\* Wm. H. Kenerson. (55) Vol. 34.  
 Dimensions of Boiler Chimneys for Crude Oil. C. R. Weymouth. (55) Vol. 34.  
 Tests of a 1000-H. P. 24 Tubes High B. & W. Boiler.\* B. N. Bump. (55) Vol. 34.  
 Air in Surface Condensation.\* Geo. A. Orrok. (55) Vol. 34.

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- The Properties of Saturated and Superheated Ammonia.\* William E. Mosher. (55) Vol. 34.
- The Physical Properties of Anhydrous Ammonia.\* Lionel S. Marks and F. W. Loomis. (55) Vol. 34.
- Experiments with North Dakota Lignite in a Steam Power Plant and a Gas Producer.\* Calvin H. Crouch. (55) Vol. 34.
- The Reduction in Temperature of Condensing Water Reservoirs Due to Cooling Effect of Air and Evaporation.\* W. R. Ruggles. (55) Vol. 34.
- The Present State of Development of Large Steam Turbines.\* A. G. Christie. (55) Vol. 34.
- New Processes for Chilling and Hardening Cast Iron.\* Thos. D. West. (55) Vol. 34.
- A New Analysis of the Cylinder Performance of Reciprocating Engines.\* J. Paul Clayton. (55) Vol. 34.
- Measurement of Natural Gas. Thos. R. Weymouth. (55) Vol. 34.
- The Strength of Gear Teeth.\* Guido H. Marx. (55) Vol. 34.
- Symposium on Cement Manufacture, Depreciation Factor in the Cost of Producing Portland Cement. Frederick H. Lewis. (55) Vol. 34.
- A Discussion of Certain Thermal Properties of Steam.\* G. A. Goodenough. (55) Vol. 34.
- Recent Development of Gas Power in Europe. H. J. Freyn. (55) Vol. 34.
- Problems in Natural Gas Engineering.\* Thomas R. Weymouth. (55) Vol. 34.
- Measurement of Air in Fan Work.\* Charles H. Treat. (55) Vol. 34.
- Modern Condensing Systems.\* A. E. Leigh Scanes. (75) Jan.
- Theory and Experiment in the Flow of Steam Through Nozzles.\* James B. Henderson. (75) Jan.
- Indicators.\* James G. Stewart. (75) Jan.
- Purchasing Coal by Specification. J. A. Moyer. (98) Aug.
- Conveying Plant for Coal and Coke in Gas-Works.\* Hubert Hermanns. (Abstract of translation.) (66) Aug. 26.
- The Corrosion of Condenser Tubes. Guy D. Bengough and Richard M. Jones. (Paper read before the Inst. of Metals.) (47) Serial beginning Aug. 29; (11) Aug. 29.
- The Scottish Shale Oil Industry.\* A. E. von Groeling. (12) Serial beginning Aug. 29.
- Patent Fuel Manufacture and Its Dangers. A. H. Lush. (From report made to Secy. of State.) (22) Aug. 29; (57) Aug. 29.
- Space Occupied by Water Tube Boilers. C. R. D. Meier. (Paper read before the Engrs. Club of St. Louis.) (1) Sept.
- The Motor Truck in Contracting and Construction Work. Rollin W. Hutchinson, Jr. (9) Sept.
- Air Compressors and Compressed-Air Machinery. Robert L. Streeter. (9) Sept.
- Modern Tool Steels and High-Speed Tool Alloys.\* George S. Armstrong. (9) Sept.
- Power Applications of Diesel Engines in Industrial Plants.\* C. Van Langendonck. (9) Sept.
- Motor Fire Apparatus.\* H. W. Perry. (60) Sept.
- Wagon Loaders for Handling Sand, Stone and Gravel.\* (67) Sept.
- Boiler Inspection.\* Garland P. Robinson. (Paper read before the Richmond Ry. Club.) (94) Sept.
- Shop Transportation. Oscar E. Perrigo. (108) Sept.
- Ammonia Condensers.\* Fred Ophuls. (64) Sept. 2.
- Waste of Ammonia (in Gas Manufacture). Norton H. Humphrys, Assoc. M. Inst. C. E. (66) Serial beginning Sept. 2.
- Oil Gas and Its Manufacture. E. C. Jones. (Paper read at the Univ. of California.) (66) Sept. 2.
- Spiral on Screw Conveyors. Reginald Trauttschold. (96) Sept. 4.
- Manufacturing Cold Drawn Steel Shells.\* (20) Sept. 4.
- The Determination of Oxygen in Copper and Brass.\* T. West. (Paper read before the Inst. of Metals.) (47) Sept. 5.
- What Type of Carbonizing Plant Shall We Adopt? Frederick Burnett. (Paper read before the Canadian Gas Assoc.) (24) Sept. 8.
- Greenock's First Gas Supply.\* James Macleod. (Paper read before the North British Assoc. of Gas Mgrs.) (66) Sept. 9.
- Possible Economies in Gas Manufacture.\* W. B. Davidson. (Paper read before the North British Assoc. of Gas Mgrs.) (66) Sept. 9.
- Comparative Cost of Gas and Steam Plants. L. B. Lent. (64) Sept. 9.
- The Trumbull Sheet and Tin Plate Mills.\* (20) Sept. 11; (101) Sept. 12.
- The Development of Balancing Devices for Centrifugal Pumps.\* Alex. V. Mueller. (13) Sept. 11.
- Fuel Oil in Navy Yard Forge Shops.\* F. G. Coburn. (72) Sept. 11.
- A Coal Testing Plant for the Saskatchewan Government. (96) Sept. 11.
- Uniform Boiler Specifications. Thomas E. Durban. (Paper read before the Am. Boiler Mfrs. Assoc.) (94) Sept.; (20) Sept. 11.

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- Experiments with a Tilting Manometer for Measurement of Small Pressure Differences.\* J. R. Pannell. (11) Sept. 12.
- The Ostwald Process for Making Nitric Acid from Ammonia.\* (19) Sept. 13.
- Accepted Test of a Large High Vacuum Condenser. Paul A. Bancel. (76) Sept. 15.
- Ammonia Concentration. R. B. Richardson. (83) Sept. 15.
- Manufacture and Distribution of Gas. (From *Circular No. 32*, U. S. Bureau of Standards.) (83) Sept. 15.
- Co-Operation in the Standardization of Better Practice in the Installation of Boilers and Stokers. Joseph G. Worker. (Paper read before the Inter. Assoc. for the Prevention of Smoke.) (62) Sept. 15.
- Essentials of an Automatic Stoker. J. R. Fortune. (Paper read before the Detroit Eng. Soc.) (62) Sept. 15.
- Coal Products Company's Power Plant.\* S. G. Artingstall, Jr. (64) Sept. 16.
- Distribution of Heat in Steam Boilers. Perry Barker. (Paper read before the Am. Inst. of Chemical Engrs.) (64) Sept. 16.
- Mollier Diagram for Ammonia. G. A. Goodenough and W. E. Mosher. (From *Bulletin*, Univ. of Illinois Eng. Experiment Station.) (64) Sept. 16.
- Working Results of the Woodall-Duckham Retorts at Budapest. J. Bernaner. (Abstract of paper read before the Assoc. of Gas and Water Engrs. of Austria-Hungary.) (66) Sept. 16.
- Remodelling a Small Gas-Works. L. Rodgers. (Paper read before the Victorian Gas Mgrs. Assoc.) (66) Sept. 16.
- The Construction of Meters. W. Fletcher. (Paper read before the Manchester Junior Gas Assoc.) (66) Sept. 16.
- Perpetual Force Clock Mechanisms.\* Robert Mawson. (72) Sept. 18.
- Machines and Tools for Quackenbush Rifles.\* Ethan Viall. (72) Sept. 18.
- Belt Conveyors. Reginald Trautschold. (96) Serial beginning Sept. 18.
- Removing Carbon from Gas Engines. Joseph A. Anglada. (Paper read before the National Gas Engine Assoc.) (20) Sept. 18.
- New Generators for Diesel Engines.\* (12) Sept. 19.
- The Production of Motor Spirit from Coal. A. Rollason and A. W. Taylor. (57) Sept. 19.
- The Influence of the Presence of Gas Upon the Inflammability of Coal Dust in Air.\* W. M. Thornton. (57) Sept. 19; (22) Sept. 19.
- The Proper Utilization of Coal and Fuels Derived Therefrom. H. E. Armstrong. (Paper read before the British Assoc.) (57) Sept. 19; (22) Sept. 19.
- Liquid, Solid and Gaseous Fuels for Power Production. F. W. Burstall. (Paper read before the British Assoc.) (57) Sept. 19; (22) Sept. 19; (66) Sept. 16; (12) Sept. 19.
- Charcoal Ironworks. Henry B. Wheatley. (29) Serial beginning Sept. 19.
- Automatic Sleeper-Adzing and Boring Machine.\* (11) Sept. 19.
- The Gaede Molecular Air-Pump.\* (11) Sept. 19.
- Increasing Cost of Gas Making Materials.\* B. O. Tippy. (Paper read before the Michigan Gas Assoc.) (24) Sept. 22.
- A Plea for Accurate Records of Street Main and Service Work: Their Use and Some Methods Employed in Their Preparation.\* Daniel L. Hill. (Paper read before the Canadian Gas Assoc.) (24) Sept. 22.
- Smoke Abatement and Fuel Conservation in Pittsburgh Metallurgical Plants. J. M. Searle. (Paper read before the Pittsburgh Foundrymen's Assoc.) (62) Sept. 22.
- The Locomobile: An Economic Superheated Steam Plant.\* (62) Sept. 22.
- Throttling Calorimeters. (64) Sept. 23.
- Electroplating at a Typewriter Works.\* James Stedman. (20) Sept. 25.
- A System of Burning Producer Gas.\* C. M. Garland. (20) Sept. 25.
- The Production of Eastman Kodaks.\* Ethan Viall. (72) Sept. 25.
- Pumping and Heating of Oil Fuel.\* (27) Sept. 27.
- Turning Somersaults with an Aeroplane.\* (46) Sept. 27.
- The Value of Gas Coal for Use in Gas Works. T. D. Miller. (24) Sept. 29.
- Boiler Attachments. J. E. Terman. (64) Serial beginning Sept. 30.
- Origine, Construction et Emploi d'un Accéléromètre à Maxima.\* J. Auclair. (32) July.
- L'Accéléromètre à Maxima du Laboratoire d'Essais du Conservatoire National des Arts et Métiers, Quelques Appareils Annexes Résultats d'Expériences et Recherches Diverses.\* A. Boyer-Guillon. (32) July.
- Ressources Mondiales en Carburants Légers Extraits des Pétroles, leur Développement Moyens de les Accroître.\* A. Guiselin. (32) July.
- Etude sur la Fumivrité. A. Boyer-Guillon. (37) July 31.
- Théorie Elémentaire des Machines à Air Liquide.\* Henri Brot. (37) July 31.
- Etude sur la Direction des Voitures Automobiles.\* F. Massot. (37) July 31.
- L'Epreuve d'Endurance Militaire des Véhicules de Poids Lourd (1<sup>er</sup> juillet-12 août 1913).\* D. Duaner. (33) Serial beginning Aug. 23.
- Le Funiculaire à Voyageurs du Mont Kohlerer près de Botzen (Tyrol).\* Caumont. (33) Aug. 30.



... (The following text is a dense, mostly illegible list of references or a table of contents, likely from a historical or scientific work. It contains numerous names, dates, and page numbers, which are difficult to transcribe accurately due to the image quality. The text appears to be organized in a structured manner, possibly as a bibliography or index.)

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- L'Ecole Nationale d'Arts et Métiers de Paris, Outillage des Ateliers.\* L. Pierre-Guédon. (33) Serial beginning Aug. 30.
- Théorie Générale de l'Action Stabilisatrice des Empennages Horizontaux de l'Aéroplane, Suivie d'un Aperçu Général sur les Divers Procédés de Stabilisation de l'Aéroplane. Georges de Bothezat. (37) Aug. 31.
- Pont Roulant à Main, Charge 10 Tonnes, Portées 15 600 m.\* A. Nachtergal. (34) Sept.
- La Fabrication Industrielle de l'Azote Pur par l'Air Liquide.\* Henri Brot. (33) Sept. 13.
- Leitungswiderstand überhitzten Dampfes in glatten und in gewellten Ausgleichrohren.\* C. Bach und R. Stücker. (48) July 19.
- Grossdieselmotoren, ihre Brennstoffe, Konstruktion und Anwendungsgebiete.\* (48) July 19.
- Entwicklung und Stand der Technik landwirtschaftlicher Maschinen.\* Gustav Fischer. (48) Serial beginning July 26.
- Kräfteverteilung und Greifen bei Selbstgreifen.\* Pfahl. (48) July 26.
- Die Kraftübertragungsanlage Lauchhammer-Gröditz-Riesa.\* (48) Serial beginning Aug. 2.
- Fortschritte im Bau von Flachregler-Ventilsteuern neben einem Beiträge zur Theorie der Fliehkraftregler.\* R. Proell. (48) Serial beginning Aug. 16.
- Ueber Längsstabilität der Drachenflugzeuge.\* Richard Knoller. (53) Serial beginning Sept. 5.
- Ueber den wechselnden Einfluss des günstigsten Kupplungswinkels und Querschnittsverhältnisses auf die Schwungradabmessungen bei gekuppelten doppeltwirkenden Zwillingspumpen.\* Karl Mayer. (53) Sept. 19.

**Metallurgical.**

- Case Carbonizing.\* Marcus T. Lothrop. (55) Vol. 34.
- Common Sense of the Fume Question. Herbert Lang. (103) Aug. 30.
- Federal Lead Co.'s Smelting Plant.\* H. B. Pulsifer. (82) Aug. 30.
- Carborundum Refractories. F. J. Tone. (105) Sept.
- Hydrometallurgy. Régis Chauvenet. (105) Sept.
- Concentration and Reverberatory Smelting of a Second-Class Copper Ore. F. W. Traphagen. (105) Sept.
- The Fried. Krupp Works, Friedrich Alfred Hütte, Rheinhausen.\* (11) Sept. 5.
- A Method of Improving the Quality of Arsenical Copper.\* F. Johnson. (Paper read before the Inst. of Metals.) (11) Sept. 5; (47) Sept. 19.
- Electric Iron Smelting at Hardanger. (From *Teknisk Ukeblad*.) (68) Serial beginning Sept. 6.
- Copper Leaching at Butte, Montana.\* Peter E. Peterson. (82) Sept. 6.
- Zinc-Dust Precipitation of Gold and Silver.\* A. M. Merton. (82) Sept. 6.
- Ore Bedding by the Tennessee Copper Co. H. F. Wierum. (16) Sept. 6.
- Calculation of Extraction in Cyanidation. Herbert A. Megraw. (16) Sept. 6.
- Apparatus for Catching Cinders in Gases.\* (20) Sept. 11.
- The Two New Tilting Furnaces at Buffalo.\* (20) Sept. 11.
- Electrometallurgy of Zinc.\* (26) Sept. 12.
- Canvas Plant of the Federal Lead Company.\* Claude T. Rice. (16) Sept. 13.
- No. 2 Crushing Plant of Natomas Consolidated.\* Richard H. Vail. (16) Sept. 13.
- Nickel Smelting by the Mond Process.\* A. P. Coleman. (Abstract from *Bulletin, Canada Dept. of Mines*.) (103) Sept. 13.
- Lead-Refining Plant at Omaha, Neb.\* H. B. Pulsifer. (82) Sept. 13.
- The Motherlode Mill, Salmo, B. C.\* C. Earl Rodgers. (16) Sept. 20.
- Solution Control in Cyanidation. A. W. Allen. (103) Sept. 20.
- Economical Fine Grinding in Paris.\* M. G. F. Söhnlein. (16) Sept. 27.
- Les Théories sur les Alliages Métalliques et leurs Applications Industrielles. A. Portevin. (32) June.
- Les Laitons au Nickel.\* Léon Guillet. (92) Sept.
- Untersuchungen über die Vorgänge im Hochofen.\* W. Mathesius. (50) Serial beginning Sept. 4.

**Mining.**

- The Design and Mechanical Features of the California Gold Dredge.\* Robert E. Cranston. (55) Vol. 34.
- Insulated and Bare Copper and Aluminum Cables for the Transmission of Electrical Energy, with Special Reference to Mining Work.\* Burkewood Welbourn. (106) Vol. 45, Pt. 5.
- The Bennett Duplex Vertical Overwinding Controller.\* (57) Aug. 29.
- Diamond-Drilling at the Poderosa Mine. C. L. Severy. (103) Aug. 30.
- Power-Plant at the Associated Mine, Kalgoorlie.\* M. W. von Bernewitz. (103) Aug. 30.
- Metal Mining.\* Ervin W. McCullough. (Paper read before the Civil Engrs.' Soc. of St. Paul.) (1) Sept.
- Coal-Face Conveyors at Leasingthorne Colliery, Durham.\* (22) Sept. 5.

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- Electrical Distribution for Mines. J. W. Anson. (Abstract of paper read before the South African Inst. of Elec. Engrs.) (22) Sept. 5.  
 The Sinking and Equipping of Bedwas Colliery.\* Edmund L. Hann. (Paper read before the South Wales Inst. of Engrs.) (57) Sept. 5; (22) Sept. 12.  
 New Rescue Stations in Yorkshire.\* (57) Sept. 5.  
 Itemized Equipment for Churn Drill.\* H. P. Bowen. (16) Sept. 6.  
 Mining by Wholesale.\* Thomas T. Read. (103) Sept. 6.  
 Open Air Coal Mining.\* E. J. D. Cox. (19) Sept. 6.  
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 Shaft Timbering in Swelling Ground.\* W. H. Storms. (16) Sept. 13.  
 Safety in the Mines of the Iron Ranges. Edwin Higgins. (Abstract of paper read before the Lake Superior Min. Inst.) (82) Sept. 13.  
 The Development of the Midland Coalfields. Fred. G. Meachem. (Paper read before the British Assoc.) (57) Sept. 19.  
 Mining Efficiency on the Rand. Kotzé. (From Annual Report, South African Mines Dept.) (68) Sept. 20.  
 Factors Affecting Choice of Mining Method. E. M. Weston. (16) Sept. 20.  
 Extralateral Rights to Quartz Veins.\* John B. Clayberg. (From *California Law Review*.) (16) Sept. 20.  
 A Dissertation on U. S. Mining Law. Russell L. Dunn. (82) Sept. 20.  
 Mining Methods on the Mesabi Range.\* (Report of Committee of Lake Superior Min. Inst.) (82) Sept. 27; (16) Sept. 27.

**Miscellaneous.**

- The Present Opportunities and Consequent Responsibilities of the Engineer. Alexander C. Humphreys. (55) Vol. 34.  
 Axioms Concerning Manufacturing Costs. Henry R. Towne. (55) Vol. 34.  
 The Present State of the Art of Industrial Management.\* (Majority and Minority Reports of Sub-Committee, Am. Soc. Mech. Engrs. on Administration.) (55) Vol. 34.  
 The Principles of Valuing Property. Henry K. Rowell. (55) Vol. 34.  
 Patent Law from an Engineer's Standpoint. Russel S. Smart. (5) Vol. 26, Pt. 2.  
 Organized Safety. L. R. Palmer. (98) Aug.  
 Quantitative Spectrum Analysis.\* G. A. Shook. (105) Sept.  
 In the Earth's Depths the Difficulties of Vertical Excavation and Modern Developments in Digging Methods.\* J. F. Springer. (10) Sept.  
 Home Experiments in Illumination from Large-Area Light Sources.\* Herbert E. Ives. (Paper read before the Phila. Section of the Illuminating Eng. Soc. of New York.) (66) Sept. 2.  
 The Two Epochs of Rate Regulation. William J. Norton. (Paper read before the National Elec. Light Assoc.) (86) Sept. 10.  
 Original Cost versus Replacement Cost as a Basis for Rate Regulation. Raymond V. Hayes. (From *Quarterly Journal of Economics*.) (15) Sept. 12.  
 Depreciation: Estimated and Actual. Alex. C. Humphreys. (Paper read before the Institution of Gas Engrs.) (24) Sept. 15.  
 The Pennsylvania Public Service Company Law. (24) Sept. 15.

**Municipal.**

- The Birmingham Town Planning Schemes and Notes on the Procedure Regulations.\* Henry E. Stilgoe. M. Inst. C. E. (Paper read before the Institution of Mun. and County Engrs.) (104) Serial beginning Aug. 29.  
 Causes of Wear and Deterioration of Roadways. Laurence J. Hewes. (Paper read before the Permanent Inter. Assoc. of Road Congresses.) (13) Sept.  
 Why Some Municipal Asphalt Plants Fail. H. B. Pullar. (60) Sept.  
 Petrolitic Road Construction, with Costs of Construction and Maintenance.\* K. F. Postle. (60) Sept.  
 Macadam Road Construction Statistics. John McNeal. M. Am. Soc. C. E. (60) Sept.  
 Cost and Value of Road Materials. John H. Mullen. (60) Sept.  
 The New Home Rule Charter of Dayton, Ohio. (60) Sept.  
 The Patch System of Road Maintenance. Zdensko Vytvan. (Paper read before the Third Inter. Road Congress.) (86) Sept. 3.  
 Machine Rammers for Compacting Broken Stone. C. Guillet. (Paper read before the Third Inter. Road Congress.) (86) Sept. 3.  
 Wood Block Pavements in Australia. A. C. Mountain. (Paper read before the Third Inter. Road Congress.) (86) Sept. 3.  
 Utilization of Lead Slag for Pavement Purposes. D. C. Callais. (Paper read before the Third Inter. Road Congress.) (86) Sept. 3.  
 Street and Pavement Construction. A. F. Macallum. (96) Sept. 4.  
 Automobiles and Improved Roads.\* Logan Waller Page. (46) Sept. 6.  
 Planning of New Streets and Roads. Nelson P. Lewis. (Paper read before the Third Inter. Road Congress.) (86) Sept. 10.

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- Authorities in Charge of the Construction and Maintenance of the Highway System of France. E. Marion. (Paper read before the Third Inter. Road Congress.) (86) Sept. 10.
- Permanent Roads an Economic Necessity.\* Harry Wilkin Perry. (19) Sept. 13.
- Organization of the Street Department of St. Louis, Mo. James C. Travilla. (Paper read before the Third Inter. Road Congress.) (86) Sept. 17.
- Summary of Practice of Various Countries in the Construction of Macadamized Roads Bound with Bituminous, Tarry or Asphaltic Materials. J. Walker Smith. (Paper read before the Third Inter. Road Congress.) (86) Sept. 24.
- Work of the Massachusetts Highway Commission in 1912. (86) Sept. 24.
- Recent Improvements in Macadam Road Machinery. A. W. Dean. (Abstract of paper read before the Permanent Inter. Assoc. of Road Congresses.) (13) Sept. 25.
- Concrete Road Construction. A. N. Johnson. (Abstract of paper read before the Permanent Inter. Assoc. of Road Congresses.) (13) Sept. 25.
- Bituminous Concrete Pavements. Wm. B. Spencer. (Abstract of paper read before the Am. Soc. of Eng. Contractors.) (96) Sept. 25.
- The Extent and Wear of Pavements in Canadian Cities. (96) Sept. 25.
- Hard Roads in Wayne County, Michigan.\* (14) Sept. 27.
- Asphalt Paving Cements and Road Binders. J. W. Howard. (14) Sept. 27.
- Experiments in Brick Road Construction, Test Data and Costs of Section Containing Fourteen Varieties of Paving Block.\* James T. Voshell. (14) Sept. 27.
- Les Pavés de Granit de Scandinavie (Suède et Norvège).\* Labordère. (43) July.
- Künftige Aufgaben des Städtebaues. H. Chr. Nussbaum. (7) Aug. 16.
- Ueber Abbruch von Stampfbeton. Ernst Schick. (78) Sept. 13.

**Railroads.**

- Rotary Snow Plows.\* H. H. Vaughan. (5) Vol. 26, Pt. 2.
- Train Lighting. H. A. Currie and Benjamin F. Wood. (55) Vol. 34.
- Factors in the Selection of Locomotives in Relation to the Economics of Railway Operation. O. S. Beyer, Jr. (55) Vol. 34.
- Results of Tests on the Discharge Capacity of Safety Valves.\* (For Locomotives.) E. F. Miller. (55) Vol. 34.
- Electrical Locomotives of the Lötschberg Railway.\* (26) Aug. 29.
- Wireless Train Control. (26) Aug. 29; (12) Aug. 29.
- Electric Locomotives for Main Line and Suburban Services.\* B. Parker Haigh. (Paper read before the Scientific Soc. of the Royal Technical College, Glasgow.) (47) Serial beginning Aug. 29.
- New French Car-Lighting Dynamos.\* (26) Aug. 29.
- A Consideration of British Express Locomotive Design. E. A. Johnston. (12) Serial beginning Aug. 29.
- The Giovi Line and Chiappella Station. (12) Serial beginning Aug. 29.
- New Heavy Goods Train Locomotives, Northern Railway of France.\* (23) Aug. 29.
- All Steel Carriages for the South Indian Railway.\* (23) Aug. 29.
- Steam Railroad Electrification.\* Chas. P. Kahler. (Paper read before the Utah Soc. of Engrs.) (1) Sept.
- 15-Ton Wagon, Egyptian State Railways.\* (21) Sept.
- Train Control, London and North-Western Railway.\* (21) Sept.
- Preventing Rails Creeping. (21) Sept.
- Manufacturing Truck Transoms for Passenger Coaches.\* George Fraser. (Paper read before the Master Blacksmiths' Assoc.) (25) Sept.
- Signal Standards, Northern Pacific Railway.\* (87) Sept.
- Study of Car Wheel Flanges and Treads. L. W. Wallace. (25) Sept.
- Platform Awnings and Roofs, Metropolitan Railway.\* (21) Sept.
- The Aisgill Collision, Evidence at Board of Trade Inquiry. (23) Sept.
- Operating Superheater Locomotives. (Abstract of Report of Committee of the Travelling Engrs. Assoc.) (25) Sept.
- The Operating Department and Fuel Economy. (Abstract of Report of Committee of the Travelling Engrs. Assoc.) (25) Sept.
- Elimination of Black Smoke from Locomotives. Martin Whelan. (Paper read before the Travelling Engrs. Assoc.) (25) Sept.
- Advantages of the Brick Arch.\* Le Grand Parish. (Paper read before the Travelling Engrs. Assoc.) (25) Sept.
- Care of Locomotive Brake Equipment. (Report of Committee of the Travelling Engrs. Assoc.) (25) Sept.
- Inspection Locomotive on the Reading.\* (25) Sept.
- The Theory of Reproduction Applied to Railway Rights of Way and Station Grounds.\* E. W. Reed. (86) Sept. 3.
- An Example of Concrete Foundations for Heavy Service Railroad Track.\* F. Auryansen. (86) Sept. 3.
- The Railway Situation in Hamilton.\* E. H. Darling. (96) Sept. 4.

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- Alaska's Need of Railway Development.\* E. E. Swergal. (15) Sept. 5.  
 Valuation of Kansas Railways. C. C. Witt. (Abstract of Report to the Public Utilities Comm.) (15) Sept. 5.  
 The Sulzer-Diesel Locomotive.\* (11) Sept. 5.  
 Air Brakes and Modern Conditions. Walter V. Turner and P. H. Donovan. (Paper read before the Ry. Club of Pittsburgh.) (15) Sept. 5.  
 Benjol Electric Train for the Khedive of Egypt.\* (12) Sept. 5; (23) Sept. 12.  
 Atlantic Type Inspection Locomotive.\* (15) Sept. 5.  
 Powdered Fuel for Locomotives. Walter D. Wood. (23) Sept. 5.  
 New Restaurant Cars, Great Western Railway.\* (23) Sept. 5.  
 Reinforced Concrete Signal-Boxes.\* (23) Sept. 5.  
 Tipping Trucks (for Railways).\* (23) Sept. 5.  
 Notes on European Electric Railways.\* Louis Bell. (17) Sept. 6.  
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 Reconstruction of the G. W. R. Snowhill Station, Birmingham.\* F. Gleadow and C. E. Shackie. (Paper read before the British Assoc.) (12) Sept. 12.  
 Vickers Patent S. B. System of Train Lighting.\* (26) Sept. 12.  
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 Construction of the Portland, Eugene & Eastern.\* (15) Sept. 12.  
 Locomotive Tractive Efforts. H. A. Houston. (15) Sept. 12.  
 The North Haven Collision. (15) Sept. 12.  
 Heavy Locomotives for South Africa.\* (23) Sept. 12.  
 Grade Revision from Paris to Winchester, Louisville & Nashville Reconstruction in Kentucky.\* (14) Sept. 13.  
 The Maintenance and Operation of Superheater Locomotives.\* Gilbert E. Ryder. (Paper read before the Ry. Club of Pittsburgh.) (19) Sept. 13.  
 Commission Control of Public Utilities. John H. Roemer. (Paper read before the Assoc. Island Meeting.) (27) Sept. 13.  
 Flood Damage to the Pennsylvania Lines West.\* (18) Sept. 13.  
 Tests of Titanium Rails.\* (18) Sept. 13.  
 Aftermath of the New Haven Wreck. (18) Sept. 13.  
 Specifications for Maps and Profiles for Federal Valuation of Railroads. (14) Sept. 13.  
 The Abatement of Locomotive Smoke. D. F. Crawford. (Paper read before the Inter. Assoc. for the Prevention of Smoke.) (62) Sept. 15.  
 Construction Plant and Methods Used in Excavating a Tunnel at Montreal for the Canadian Northern Ry.\* (From *Mine and Quarry*.) (86) Sept. 17.  
 Experiments in the Preservative Treatment of Red Oak and Hard Maple Crossties. (86) Sept. 17.  
 New Coal Classification Yards of the Philadelphia & Reading Ry. at St. Clair, Penn.\* Joseph S. Ward. (13) Sept. 18.  
 Railway Efficiency. A. Crumpton. (Paper read before the Canadian Ry. Club.) (96) Sept. 18.  
 An Interesting Transportation System.\* (15) Sept. 19.  
 Rail Anchor Testing Machine.\* (15) Sept. 19.  
 Concrete Buildings on the Lackawanna.\* (15) Sept. 19.  
 Economies of Track Labor. H. R. Safford. (Paper read before the Roadmasters' and Maintenance of Way Assoc.) (15) Sept. 19.  
 The Internal-Combustion Engine Applied to Railway Locomotion. F. W. Lancaster. (Paper read before the British Assoc.) (11) Sept. 19.  
 Articulated Locomotives for the Antofagasta (Chili) & Bolivia Railway Company.\* (23) Sept. 19.  
 Compressed-Air Locomotives in Tunnel Construction.\* E. C. Amos. (23) Sept. 19.  
 Box Wagon for Grain and Coal Traffic, Canadian Pacific Railway.\* (23) Sept. 19.  
 New 0-6-0 Type Tank Engine, L. B. & S. C. R.\* (23) Sept. 19.  
 Carriers' General Suggestions for Railroad Valuation. (14) Sept. 20.  
 Oil-Spraying Machine for Track.\* (14) Sept. 20.  
 The First Diesel Locomotive.\* (46) Sept. 20; (64) Sept. 30.  
 Powerful Articulated Narrow Gauge Locomotives for Tasmania.\* (19) Sept. 20.  
 Newark-Trenton High Speed Line.\* (17) Sept. 20.  
 Hypothetical Electric Interurban Railways. Louis E. Fischer. (17) Sept. 20.  
 New Shops for the Rochester, Syracuse & Eastern Railroads.\* (17) Sept. 20.  
 Pacific Type Locomotive for the Baltimore & Ohio R. R.\* (18) Sept. 20.  
 Collision on the Pennsylvania Railroad at Tyrone, Pa.\* H. W. Beinap. (Abstract of Report to the Interstate Commerce Comm.) (18) Sept. 20.

\* Illustrated.



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- Gasoline Freight and Switching Locomotive for the Minneapolis & Northern Ry.\* (18) Sept. 20.
- Safeguarding Overhead Transmission. F. A. Barker. (From *American Industries*.) (18) Sept. 20.
- Increasing Freight Car Performance. C. C. Riley. (15) Sept. 26.
- Specifications and Rules for Douglas Fir Car Material. (15) Sept. 26.
- Organization for Handling Refrigeration Transportation. J. S. Leeds. (Paper read before the Third Inter. Congress of Refrigeration.) (15) Sept. 26.
- Large Passenger Locomotives for the C. & O. (15) Sept. 26.
- Drop Test of Heat Treated Chrome Vanadium Wheels.\* (15) Sept. 26.
- Continuation of Louisville & Nashville Improvements in Eastern Kentucky.\* (14) Sept. 27.
- Concrete Ice House for the Northern Pacific Ry. at Pasco, Wash.\* (18) Sept. 27.
- Report on Hays Mill Wreck: Transverse Fissures in Steel Rails.\* (18) Sept. 27.
- The New Haven Collision of September 2nd, 1913. (Abstract of Report of the Interstate Commerce Comm.) (18) Sept. 27.
- The Simplex System of Electrification of Works Railways.\* F. H. Diehl. (62) Sept. 29.
- La Nouvelle Gare Centrale de Copenhague.\* (33) Aug. 23.
- Locomotive type "Pacific" Compound, a Quatre Cylindres et à Surchauffe.\* (34) Sept.
- Nouvelle Gare Centrale de New-York.\* (38) Sept.
- Transformations Faites sur les Anciennes Locomotives de la Compagnie des Chemins de Fer Portugais.\* Henry Lavielle d'Anglards. (38) Sept.
- Le Réseau Oranais de l'Etat (Algérie).\* P. Caufourier. (33) Sept. 6.
- Die erste Thermo-Lokomotive.\* F. Sternenberg. (48) Aug. 23.
- Zur Eröffnung der Lötschbergbahn (Bern-Lötschberg-Simplon).\* Oder. (40) Aug. 23.
- Der Massenausgleich des Kuppelstangen-antriebs bei elektrischen Lokomotiven.\* J. Buchli und J. Rebstein. (107) Aug. 23.
- Umbauten am Bahnhofe Stralsund.\* H. Martin. (78) Aug. 25.
- Diesel-Elektrische Triebwagen der schwedischen Staatsbahnen.\* (102) Sept. 1.
- Einphasenwechselstrom-Kommutatormotor für Hauptbahnbetrieb.\* E. F. W. Alexander. (41) Sept. 4.
- Neuerungen auf dem Gebiete der Unterwassertunnels.\* Fritz Steiner. (53) Serial beginning Sept. 19.

**Railroads, Street.**

- Rapid Transit Development in Berlin and New York.\* (17) Sept. 6.
- T-Rail in Paved Streets.\* R. C. Cram. (17) Sept. 6.
- Floating and Sinking the Harlem River Section of the New York Subway.\* (14) Sept. 13; (46) Sept. 27.
- New 3 000-Kw. Substation in Fort Worth, Tex.\* (17) Sept. 13.
- The New York City Brake Order. J. N. Dodd. (17) Sept. 13.
- Niagara Power for the International Railway Company.\* (17) Sept. 13.
- Gisbert Kapp on Progress in Heavy Electric Traction. (Paper read before the British Assoc.) (17) Sept. 13; (26) Sept. 19; (73) Sept. 12; (47) Sept. 12; (11) Sept. 12; (12) Sept. 12.
- New Carhouse and Shops at Dayton, Ohio.\* (17) Sept. 20.
- New Light-Weight Express Cars of the Bay State Street Railway.\* (17) Sept. 27.
- Maintenance Costs of Old and New Railway Motors. J. C. Thirwall. (17) Sept. 27.
- All Steel Cars for the Union Traction Company of Indiana.\* (17) Sept. 27.

**Sanitation.**

- The Baltimore Sewerage Pump Valve.\* A. F. Nagle. (55) Vol. 34.
- Ventilation Standards and Ventilation Methods. R. C. Carpenter. (Paper read before the Boston Soc. of Civ. Engrs.) (1) Sept.
- Sewage Purification at Atlanta, Ga.\* (60) Sept.
- Methods and Cost of Sanitary Sewer Construction at Davenport, Ia. W. S. Anderson. (86) Sept. 3.
- Typhoid Fever in Large American Cities.\* George A. Johnson. (13) Sept. 4.
- Heating Three Small Greenhouses.\* N. S. Arthur. (101) Sept. 5.
- Individual Air Supply in School Ventilation.\* Frederick Bass. (Paper read before the Am. Soc. of Heating and Ventilating Engrs.) (101) Serial beginning Sept. 5.
- Sewage Disposal at Stratford-on-Avon. Herbert D. Bell. (Abstract from Annual Report.) (104) Sept. 5.
- Launching a Submerged Sewer Outfall at Ocean Grove.\* Marshall R. Pugh. (14) Sept. 6.
- Sewage Disinfection in Philadelphia, Details of Apparatus for Treating Effluent of Pennypack Creek Works.\* W. L. Stevenson. (14) Sept. 6.
- The Development of Sewage Disposal Practice. E. Sherman Chase. (96) Sept. 11.
- Brick Storm Sewer at Cedar Rapids, Construction Involved Use of Mounted Arch Center and Drag-Line Excavator.\* (14) Sept. 13.





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- Cost Keeping as Applied to Municipal Management of Street Cleaning. J. W. Paxton. (Paper read before the Am. Public Health Assoc.) (86) Sept. 17.
- Recent Progress in Methods and Character of Street Cleaning. S. Whinery. (Paper read before the Am. Public Health Assoc.) (86) Sept. 17.
- A Classification of Materials Encountered in Excavation Operations Which Has Been Successfully Employed on Sewer Construction. William O. Lichtner. (86) Sept. 17.
- Reasonable Requirements for the Sanitary Control of Waterways. (Report of Committee of the Am. Public Health Assoc.) (86) Sept. 17.
- Rules and Regulations of the New Jersey State Board of Health to Govern the Preparation and Submission of Designs for Sewerage Systems and Disposal Works. (86) Sept. 17; (14) Sept. 6; (13) Sept. 18.
- Studies in Air Washing. George C. Whipple and Melville C. Whipple. (Abstract of paper read before the Am. Public Health Assoc.) (13) Sept. 18.
- Sewage Treatment Plant for a Sanatorium.\* P. H. Norcross. (13) Sept. 18.
- Plumbing in a Tall Bank Building.\* (101) Sept. 19.
- The Utilisation of Sewage in Agriculture. J. Grossman. (Paper read before the British Assoc.) (29) Sept. 19.
- Fresh Sludge and Decomposed Sludge.\* Hermann Bach and Leslie C. Frank. (14) Sept. 20.
- Appendix to Royal Commission's Eighth Sewage Report. (14) Sept. 20.
- Heat Transmission with Pipe Coils and Cast-Iron Heaters under Fan Blast Conditions.\* L. C. Soule. (Abstract of paper read before the Am. Soc. of Heating and Ventilating Engrs.) (64) Sept. 23.
- Cleaning Streets in Washington. Methods Used Include Hand Patrol, Machine-Broom Cleaning, Squeegees and Flushing. J. W. Paxton. (14) Sept. 27.
- Versuche mit grossen durch Blattfedern geführten Ringventilen für Kanalisations-pumpen und Beiträge zur Dynamik der Ventilbewegung.\* Kurt Schoene. (48) Aug. 9.
- Verwendung des Ozons bei der Lüftung, Ergebnisse der Praxis.\* Ludwig Ad. v. Kupffer. (Paper read before the Congress for Heating and Ventilation.) (7) Aug. 16.
- Die Konstruktion der Absitzbecken.\* R. Hauptner. (7) Aug. 30.
- Die Kanalisation der Stadt Marosvásárhely in Ungarn.\* Emerich Forbáth. (7) Sept. 6.

**Structural.**

- Tests of Chillable Irons.\* Thos. D. West. (55) Vol. 34.
- Strength of Steel Tubes, Pipes and Cylinders Under Internal Fluid Pressure.\* Reid T. Stewart. (55) Vol. 34.
- The Applications of Polarized Light to Mechanical Engineering Problems of Stress Distribution.\* E. G. Coker. (75) Jan.
- The Design of a Gasholder.\* (66) Serial beginning Aug. 26.
- A Combined Office and Workshop.\* F. Southey, Assoc. M. Inst. C. E. (12) Aug. 29.
- Factory Building with Reinforced Concrete Interior Construction.\* (12) Aug. 29.
- Partitions for Factories and Industrial Buildings.\* Henry Gratton Tyrrell. (9) Sept.
- Small Dwellings Acquisition Act. J. L. Redfern. (Paper read before the Institution of Municipal and County Engrs.) (104) Serial beginning Sept. 5.
- The Strength of Hooks and Similar Curved Beams.\* (11) Sept. 5.
- Determining Proportions of Concrete Mixtures After Hardening. H. Burchartz. (14) Sept. 6.
- Suspended Grillage Foundation of Thirteen-Story Building. (14) Sept. 6.
- The Erection of the Structural Steel for a Large Boiler House. Alden W. Welch. (86) Sept. 10.
- Results of Some Tests to Determine the Pressure Exerted by Wet Concrete.\* (86) Sept. 10.
- Valuation of Buildings. Robert H. Overstreet. (13) Sept. 11.
- The Housing Problem and Its Solution. Reginald Brown. (Paper read before the Institution of Municipal and County Engrs.) (104) Serial beginning Sept. 12.
- Erection Derricks Supported Independently of Concrete Floors.\* (14) Sept. 13.
- Reinforced Brick Is Cheaper Than Concrete.\* Nathaniel Ellery. (Paper read before the Insurance Soc. of America.) (76) Sept. 15.
- Special Concrete Foundations in the Manila Port District.\* John W. Graham. (From *Quarterly Bulletin*, Bureau of Public Works, Manila, P. I.) (13) Sept. 18.
- Factors Causing Unsatisfactory Housing and Their Prevention.\* G. Bertram Hart-free. (Paper read before the Institution of Municipal and County Engrs.) (104) Serial beginning Sept. 19.
- The Powell Saccharine Process for Seasoning and Preserving Timber.\* R. E. Neale. (26) Sept. 19.
- Values of Paints in Protecting Metals.\* Henry A. Gardner. (101) Sept. 19.
- The Compressive Strength of Concrete and Stone.\* Ewart S. Andrews. (12) Sept. 19.

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- Constructing a Ten-Story Concrete Building.\* (14) Sept. 20.  
 Reinforced Concrete Coal and Ash Bunker for the Seelbach Hotel, Louisville, Ky.\*  
 G. D. Crain, Jr. (86) Sept. 24.  
 Bending Moments in Flat Slabs. V. J. Elmont. (96) Sept. 25.  
 Armature des Pieces Fléchies de Hauteur Réduite en Beton Armé, Formules de M. Lebecq.\* A. Goupil. (43) July.  
 Détermination Complète sur un Modèle Réduit des Tensions qui se Produiront dans un Ouvrage; Utilisation de la Double Réfraction Accidentelle du Verre à l'Etude des Efforts Intérieurs dans les Solides.\* Mesnager. (43) July.  
 Ueber Trägheitsmomente.\* Ramisch. (81) Serial beginning Pt. 5.  
 Befestigung der Fenster- und Torflügel.\* C. Wilcke. (81) Pt. 5.  
 Veränderungen statisch unbestimmter eiserner Dachbinder in statisch bestimmte und neue graphische Berechnungen zur Spannungsermittlung.\* Martin Gsell. (81) Serial beginning Pt. 5.  
 Die Neubauten der Gross-Brauerei Dischinger am neuen Hauptbahnhof in Darmstadt.\* Steinberger. (51) Sup. No. 17.  
 Die 1000 t-Materialprüfmaschine, Bauart Emery, des Bureau of Standards in Washington.\* M. Kurrein. (48) July 19.  
 Einiges über die Lebensdauer von Verzinkungspfannen.\* C. Diegel. (48) July 19.  
 Einiges über die Berechnung von aus Rechtecken zusammengesetzten Fachwerken mit Hilfe der Clapeyronischen Gleichungen. Ph. Leip. (78) Aug. 25.  
 Ueber Nebenspannungen bei Eisenbetonunterzügen.\* H. Marcus. (40) Aug. 27.  
 Berechnung von Fundamenten unter Berücksichtigung der Elastizität des Baugrundes.\* Otto Fröhlich. (78) Serial beginning Sept. 13.  
 Schwere Betonfundierungen auf Hüttenwerken. W. Schömburg.\* (78) Sept. 13.  
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**Topographical.**

- Precise Leveling in New York City.\* Frederick W. Koop. (Abstract of paper read before the Municipal Engrs. of the City of New York.) (13) Sept. 4.  
 An Aviation Map of the World and Marks for Aviators, Based on the International World Map.\* (19) Sept. 20.  
 Some Practical Examples of Provincial Land Surveying.\* J. A. Macdonald. (96) Sept. 25.

**Water Supply.**

- The Current Meter Rating Station at the Irrigation Office, Department of the Interior, Alberta.\* F. H. Peters. (5) Vol. 26, Pt. 2.  
 The Hydro-Electric Plant of the Sherbrooke Railway and Power Company at Sherbrooke.\* C. L. Cate. (5) Vol. 26, Pt. 2.  
 The V-Notch Weir Method of Measurement.\* D. Robert Yarnall. (55) Vol. 34.  
 The Reduction in Temperature of Condensing Water Reservoirs Due to Cooling Effect of Air and Evaporation.\* W. B. Ruggles. (55) Vol. 34.  
 On the Control of Surges in Water Conduits.\* W. F. Durand. (55) Vol. 34.  
 Speed Regulation in Hydro-Electric Plants. Wm. F. Uhl. (55) Vol. 34.  
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 Reinforced Concrete Stand Pipe at Belton, Texas.\* Thomas L. Fountain. (67) Sept.  
 California's Great Dam.\* Clovis A. Farnsworth. (10) Sept.  
 Pure Drinking Water: the Wonderful Success of the "Otto" System of Water Sterilization and Purification.\* Austin C. Lescarboura. (10) Sept.  
 Animal Growths in Water Pipes. Samuel C. Chapman. (Abstract of paper read before the Inst. of Water Engrs.) (66) Sept. 2.  
 Some Features of Engineering Appraisalment of Water Works Properties, with Special Reference to the Appraisements for Rate Readjustment at Chillicothe, O., and Texarkana, Ark., and Texas. Philip Burgess. (Paper read before the Central States Water Works Assoc.) (86) Sept. 3.  
 The Elimination of Tastes in Water Which Has Been Treated with Hypochlorite of Lime, Quantitative Data. (86) Sept. 3.  
 The Classification of Inventory for Water Utilities and the Inspection of Water Works Systems by the Wisconsin Railroad Commission. W. D. Pence. (Paper read before the Indiana Water Supply Assoc.) (86) Sept. 3.  
 Water-Works Organizations and Operating Methods; St. Paul, Minn., and San Diego, Calif.\* (13) Sept. 4.  
 Drastic Provisions of the San Diego, Calif., Water-Works Ordinance. (13) Sept. 4.  
 The Proposed Reforestation of the Cedar River Watershed, Seattle Water-Supply.\* (13) Sept. 4.  
 The Problem of Finding the Proper Turbine Capacity to be Installed at a Water-Power Site.\* Clemens Herschel. (13) Sept. 4.  
 Lining an Irrigation Ditch with Hess Metallic Fluming.\* Elbert M. Chandler. (13) Sept. 4.  
 Neglected First Principles of Masonry Dam Design.\* George Holmes Moore. (13) Sept. 4.

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- Chemical and Bacteriological Examination of London Waters. A. C. Houston. (From Report to the Metropolitan Water Board.) (104) Sept. 5.
- Electric Thawing of Frozen Water Pipes.\* (14) Sept. 6.
- Lime Sterilization of Water, Results of Research Work Conducted at the Columbus Water-Purification Plant. Charles P. Hoover. (14) Sept. 6.
- Permanent Water Supply for Cherryvale, Bringing Water 6 Miles and Filtering It for a Town of 6 000 in Kansas.\* (14) Sept. 6.
- Hauling Submerged Water Main with Steam Winch.\* (14) Sept. 6.
- Automatic Chemical Feeder.\* (14) Sept. 6.
- Construction of Arrowrock Dam.\* M. G. Doil. (Abstract from *Mine and Quarry*.) (14) Sept. 6.
- Self-Supporting Arch Penstock.\* (14) Sept. 6.
- Preliminary Studies for the Development of a 300 000-H. P. Hydro-Electric Plant at the Dalles of the Columbia River.\* L. F. Harza and V. H. Reineking. (Abstract of Report to the State Engineer.) (86) Sept. 10.
- Results of Experiments on Aeration Nozzles for the New Mechanical Water Filtration Plant at Baltimore, Md.\* (86) Sept. 10.
- A Study of Irrigation Heads in the Modesto and Turlock Irrigation Districts, California. (13) Sept. 11.
- Rapid Construction on Medina Valley Irrigation Project in Texas.\* Terrell Bartlett. (13) Sept. 11.
- A 75-Year Record of Rainfall; St. Paul, Minn. (From Report of Board of Water Comms., St. Paul.) (13) Sept. 11.
- A New Device for Locating Leaks in Water Mains.\* (13) Sept. 11.
- A Water Supply for Winnipeg. Rudolph Hering, Frederic P. Stearns, and James H. Fuertes. (Abstract of Report to the City of Winnipeg.) (96) Sept. 11.
- Determining Power Possibilities on a Watershed.\* Lyle A. Whitsit. (13) Sept. 11.
- Progress in the Investigation of the Water Powers of British Columbia. Arthur V. White. (From Report made to the Conservation Comm. of Canada.) (96) Sept. 11.
- Irrigation in Oregon. John H. Lewis. (Paper read before the Western Canada Irrig. Assoc.) (96) Sept. 11.
- Concrete Dam Construction near Trenton, Ontario.\* (96) Sept. 11.
- Diesel Engine Pumping Station at the Gladstone Dock, Liverpool.\* (11) Sept. 12.
- Water Purification. George W. Fuller and others. (Report of Comm. to the Am. Public Health Assoc.) (14) Sept. 13.
- Negative-Head Patent Decision, Opinion of the Circuit Court in Case of Mechanical Filters at Harrisburg. (14) Sept. 13.
- Surge Tank at San Francisquito Power Station No. 1.\* (14) Sept. 13.
- Uniformity in Water-Supply Plans, New Jersey State Board of Health's New Regulations. (14) Sept. 13.
- Opening of the World's Greatest Power Plant (Keokuk, Iowa).\* (46) Sept. 13.
- Data on the Condition of Mechanical Filter Wash Water. L. A. Fritze. (Paper read before the Am. Public Health Assoc.) (86) Sept. 17.
- Notes on Water Softening and Decolorization with Special Reference to Methods Employed at the Grand Rapids, Mich., Filtration Plant. Walter A. Sperry. (Paper read before the Am. Public Health Assoc.) (86) Sept. 17.
- Notes on the Prevention of Iron Corrosion. W. F. Monfort. (Paper read before the Am. Public Health Assoc.) (86) Sept. 17.
- Determinations of Real and Doubtful Value in the Routine Water Analyses Usually Made in Connection with Sanitary Surveys. H. E. Barnard. (Paper read before the Am. Public Health Assoc.) (86) Sept. 17.
- The Water Supply of Edmonton, Alta. Willis Chipman. (From Report to the City of Edmonton.) (96) Sept. 18.
- A New Portable Hand Pump.\* (12) Sept. 19.
- Puntledge Hydroelectric Power Plant.\* (14) Serial beginning Sept. 20.
- Butterfly Gates for the San Francisquito Power Station No. 1.\* (14) Sept. 20.
- Narrows Siphon of the Catskill Aqueduct, Flexible-Joint Submarine Pipe Line, 36 Inches in Diameter and 10 000 Feet Long.\* Alfred D. Flinn, M. Am. Soc. C. E. (14) Sept. 20.
- Groundwater Movements, Drainage Methods and Open Channel Drainage. Louis Schmeer. (86) Sept. 24.
- Winnipeg Rainfall. F. Hill Parr, M. Inst. C. E. (96) Sept. 25.
- The Proposed Shoal Lake or Greater Winnipeg Aqueduct. (13) Sept. 25.
- L'Aqueduc des Pouilles (Italie Méridionale).\* Gennaro Fattorini. (33) Aug. 23.
- Untersuchungen über die Strömungsvorgänge im Steigrohr eines Druckluftwasserhebers.\* K. Hoerber. (48) July 26.
- Das Kraftwerk Wyhlen der Kraftübertragungswerke Rheinfelden A.-G.\* E. Frey und O. Albrecht. (41) Serial beginning Sept. 11.

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- The Protection of the Foreshore at Dallas Road, Victoria, B. C.\* G. M. Duncan. (5) Vol. 26. Pt. 2.
- Dredger for the Egyptian Delta.\* (12) Aug. 29.

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- Bucket Ladder Excavators on the Spanish Canal Alfons XIII, from Seville to the Atlantic.\* (86) Sept. 3.
- An Interesting Pile Failure.\* John W. Cunningham. (13) Sept. 4.
- Large Clam-Shell Dredges; Levee Building Methods and Standards in California.\* Fred H. Tibbetts. (13) Sept. 4.
- Panama Spillway and Culvert Gate Parts.\* (72) Sept. 4.
- Coast Sand Dunes, Sand Spits and Sand Wastes.\* Gerald O. Case. (104) Serial beginning Sept. 5.
- Commonwealth Pier 5, Boston, a 400 x 1 200-Foot Pier with a Two-Story Steel Shed on Solid Fill and Pile Foundations between Docks 40 Feet Deep.\* (14) Sept. 6.
- St. Lawrence Ship Channel Improvements.\* Harry Chapin Plummer. (46) Sept. 6.
- The Cape Cod Canal.\* (46) Sept. 6.
- Design for the Foundation of 150-Ton Shear-Legs. Leonard Goodday. (96) Sept. 11.
- Harbor Construction at Kobe and Yokohama, Japan.\* Wilson T. Howe. (13) Sept. 18.
- Pier for Outer Harbor at Chicago.\* (13) Sept. 18.
- The Water Level of Lake Erie.\* (Report of the Inter. Waterways Comm.) (96) Sept. 18.
- Present Stage of Construction on the New York State Barge Canal. Emile Low. (13) Sept. 18.
- The Aerial Propulsion of Barges on Canals. L. Blin Desbleds. (Paper read before the British Assoc.) (12) Sept. 19.
- Coast Erosion in Cumberland.\* (104) Sept. 19.
- Harbour Projections and Their Effect Upon the Travel of Sand and Shingle.\* Ernest R. Matthews. (Paper read before the British Assoc.) (11) Serial beginning Sept. 19.
- How Not to Build a Retaining Wall.\* (14) Sept. 20.
- Calculation of Docks and Bulkhead Walls.\* (14) Sept. 20.
- Method and Cost of Operating Hydraulic Pipe-Line Dredges on the Upper Mississippi River.\* Charles W. Durham. (86) Sept. 24.
- Proposed Plan for Flood Protection at Columbus, Ohio.\* John W. Alvord and Charles B. Burdick. (From Report made to the City of Columbus.) (86) Sept. 24; (13) Sept. 25; (14) Sept. 27.
- Chinese Famine and Proposed Flood Prevention.\* Charles Davis Jameson. (Abstract of Report on River, Lake and Land Conservancy.) (13) Sept. 25.
- Praktische Gefälleberechnung bei ungleichförmiger Wasserbewegung in Werkkanälen.\* D. Rümelfin. (81) Pt. 5.
- Beobachtungs- und Signalturm im Hafen zu Kiel.\* Paul Müller. (51) Sup. No. 16.
- Herstellung und Verarbeitung grosser Betonmassen auf Grund von Erfahrungen und Versuchen beim Bau der neuen Ostseeschleusen des Kaiser Wilhelm-Kanals.\* Prietze. (48) Aug. 16.
- Der Grossschiffahrtsweg Berlin-Stettin.\* Mattern. (48) Serial beginning Aug. 23.
- Eine neue Geschwindigkeitsformel für natürliche Flussgerinne. Otto Gröger. (53) Aug. 29.
- Versuche am Rhein-Herne-Kanal über die Grosse des Wasserverlustes durch Versickerung.\* Manzke. (40) Aug. 30.
- Errichtung eines "Leuchtturmes" in Eisenbeton am Eingange der grossen Hafeneinfahrt von Alexandrien.\* W. Stross. (67) Sept. 13.

\*Illustrated.